The Association of Special Libraries and Information Bureaux

Report of Proceedings

of the

FOURTH CONFERENCE

held at

Trinity College, Cambridge

SEPTEMBER 23rd — 26th 1927

THE OBJECTS OF THE ASSOCIATION are: to examine, foster, and co-ordinate the activities of special libraries, information bureaux, and similar services; to act as a clearing-house for these services; to develop the usefulness and efficiency of special libraries and information bureaux under whatever titles they may function; and generally to promote, whether by conferences, meetings, or other means, the wider dissemination and the systematic use of published information.

The Association aims at assisting members who desire information of any kind to get into touch with the appropriate library or other body specializing on the subject; it does not itself attempt to build up any centralized organization to provide the detailed information direct.

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J. C. WITHERS, Ph.D., British Cotton Industry Research Association.

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LIST OF VISITORS TO THE FOURTH CONFERENCE

[*See also Supplementary List at end.*]

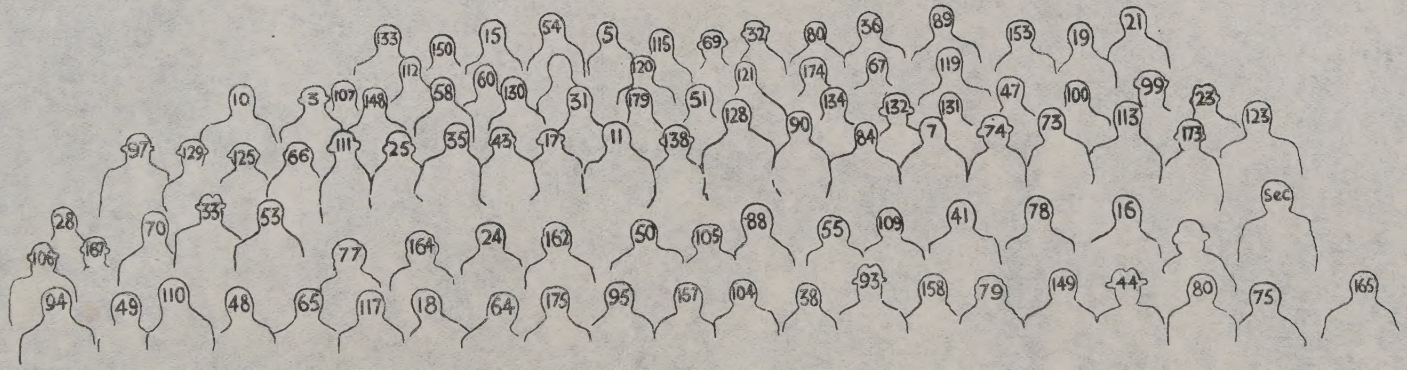
(Organizations are indicated in brackets [ ] after the name of the individual attending.)

1 Mrs. [illegible] Adam.
2 *Miss M. L. Alexander.
3 Miss G. E. Allen, B.Com.
4 R. Ogle Morrison, B.A.
5 J. N. [illegible], B.Litt., M.A.
6 Miss [illegible].
7 A. R. [illegible].
8 Miss [illegible] Baverstock.
9 Miss [illegible].
10 W. [illegible], M.A., Ph.D.
11 J. W. [illegible].
12 F. [illegible], LL.B.
13 M. [illegible].
14 Sir Geoffrey Butler.
15 R. F. [illegible], C.M.G.
16 Walter [illegible], Ph.D.
17 Miss [illegible].
18 Dr. [illegible].
19 W. [illegible].
20 W. [illegible], M.A., LL.D.
21 [illegible].
22 Miss [illegible].
23 T. [illegible].
24 T. S. [illegible], M.Sc.
25 Miss [illegible].
26 *Miss M. [illegible].
27 Miss [illegible].
28 T. D. [illegible].
29 S. [illegible].
30 W. [illegible].
31 E. [illegible].
32 Mrs. [illegible].
33 Sir [illegible].
34 E. W. [illegible].
35 H. O. [illegible].
36 [illegible].

[illegible] Library.
[illegible] Association.
[illegible] Research Council.
[illegible] Society.
[illegible] Library, University.
[illegible] Teachers.
[illegible] Surgeons Library.
[illegible] Office.
[illegible] Four Secondary Associa
[illegible] Central Office.
[illegible] Ltd.
[illegible] Research Committee.
[illegible], Ltd., Cheltenham.
[illegible] British Rubber and
[illegible], Croydon.
[illegible] Science Master.
[illegible] Institute of Engineers and
[illegible], Newcastle-upon-Tyne.
[illegible] Association for the Blind.
[illegible] Workers for Women
[illegible] Industries, Leeds.

(*Signatures of those who attended the first day of the Conference only are printed in italics.*)

LIST OF VISITORS TO THE CONFERENCE HELD AT NEWNHAM COLLEGE, CAMBRIDGE, SEPTEMBER 30TH TO OCTOBER 3RD, 1931.



KEY TO PHOTOGRAPH OF VISITORS ATTENDING THE CONFERENCE,
TAKEN ON THE STEPS OF THE HALL OF TRINITY COLLEGE, CAMBRIDGE, SEPTEMBER 24TH, 1927.

(Reference should be made to the corresponding numbers given in the list which follows of visitors to the Conference.)

LIST OF VISITORS TO THE FOURTH CONFERENCE.

[*See also Supplementary Lists at end.*]

(*Organizations are located in London, unless indicated otherwise.*)

1	Mrs. R. J. Adam.	National Society for the Prevention of Cruelty to Children.
2	*Miss M. L. Alexander.	Special Libraries Association (of North America).
3	Miss M. K. E. Allen, B.Com.Sc.	Linen Industry Research Association, Lambeg.
4	R. Olaf Anderson, B.A.	George G. Harrap and Co., Ltd.
5	J. N. L. Baker, B.Litt.,M.A.	Oxford University School of Geography.
6	Miss H. A. Ball.	International Standard Electric Corporation.
7	A. R. Barnes.	George Philip and Son, Ltd.
8	Miss K. M. Baverstock.	Librarian, Medical Research Council.
9	Miss Blair.	(*a*) Charity Organization Society. (*b*) Cambridge Central Aid Society.
10	W. Bonser, B.A., Ph.D.	(*a*) Medical Sciences Library, University College, London. (*b*) Folk-lore Society.
11	J. W. H. Brown.	National Union of Teachers.
12	F. Bullock, LL.B., F.C.I.S.	Royal College of Veterinary Surgeons Library.
13	M. R. K. Burge.	International Labour Office.
14	Sir Geoffrey Butler, K.B.E., M.P.	President of the Conference.
15	R. F. Cholmeley, C.B.E.	Joint Committee of the Four Secondary Assocns.
16	Walter Clark, Ph.D., F.I.C., F.R.P.S.	Science Museum.
17	Miss V. R. Clayton.	British Drama League.
18	Percy Cohen.	Conservative and Unionist Central Office
19	W. C. Coles.	James Pascall, Ltd.
20	W. L. Cooper, M.A.,F.L.A.	Bristol University.
21	John H. Costain, M.A.	University of Birmingham Research Committee.
22	Miss D. C. Crowhurst.	Rural Industries Bureau.
23	T. H. Crowther.	British Belting and Asbestos, Ltd., Cleckheaton.
24	T. R. Dawson, M.Sc.,F.I.C.	Research Association of British Rubber and Tyre Manufacturers, Croydon.
25	Miss L. B. Dibben.	Ministry of Labour.
26	*Miss M. Digby.	Horace Plunkett Foundation (Co-operative Reference Library).
27	Miss K. M. Dowding.	Chiswick Polish Co., Ltd.
28	F. Donker Duyvis.	(*a*) Nederlandsch Instituut voor Documentatie en Registratuur. (*b*) Commission Internationale de la Classification Décimale.
29	E. T. Elbourne, A.M.I.Mech.E.	Elbourne's Marketing Intelligence Index.
30	W. A. Fenton, M.A.	Cambridge Public Libraries.
31	E. A. Fisher, M.A., B.Sc. (Oxon.), F.I.C., F.Inst.P.	Research Association of British Flour Millers, St. Albans.
32	Mrs. L. B. Flower,O.B.E.	"Christian Science Monitor."
33	Sir George Fordham.	
34	E. W. Fraser-Smith, M.A., A.M.Inst.C.E.	North-East Coast Institution of Engineers and Shipbuilders, Newcastle-on-Tyne.
35	H. O. Frind, F.R.G.S.	
36	Arnold Frobisher, B.Sc., F.S.S.	British Research Association for the Woollen and Worsted Industries, Leeds.

37	Lt.-Colonel A. T. Gage, C.I.E., M.A., B.Sc., M.B., F.L.S.	Linnean Society of London.
38	H. Vincent Garrett.	Rowntree and Co., Ltd., York.
39	Stephen Gaselee, C.B.E.	
40	*L. Gaster, F.J.I.	(*a*) Illuminating Engineering Society. (*b*) Circle of Scientific, Technical, and Trade Journalists. (*c*) British Section, International Association of Journalists. (*d*) National "Safety First" Association.
41	L. D. Goldsmith, B.Sc., F.I.C.	(*a*) Research Laboratories, General Electric Co., Ltd. (*b*) Association of Scientific Workers.
42	A. A. Gomme.	Patent Office.
43	Miss S. E. S. Green.	J. Lyons and Co., Ltd.
44	Sir Richard Gregory, D.Sc., F.Inst.P., F.R.A.S.	British Science Guild.
45	Temple Grey, M.A., M.B., Ch.M.	Grotius Society.
46	C. W. Guillebaud, M.A.	
47	F. Hall, B.Sc. (Econ.).	British Electrical and Allied Manufacturers' Association.
48	B. M. Headicar, F.L.A.	(*a*) London School of Economics and Political Science. (*b*) Joint Standing Committee on Library Co-operation.
49	C. E. Hecht, M.A.	Food Education Society.
50	Dr. P. Heile.	Hamburgisches Welt-Wirtschafts-Archiv.
51	*Miss C. Henderson.	Research Association of British Rubber and Tyre Manufacturers, Croydon.
52	F. Henn.	Imperial Institute.
53	R. H. Herford.	Institute of Commercial Research, Ltd.
54	R. H. Hill, M.A.	Bodleian Library, Oxford.
55	Miss W. Hill.	Royal Colonial Institute Library.
56	W. Leonard Hill, A.I.P.A.	"Chemical Engineering and Chemical Catalogue."
57	Mrs. W. L. Hill.	
58	F. A. Hoare.	National Union of Teachers.
59	J. E. Hodgson.	Royal Aeronautical Society.
60	C. H. Hooper.	South-Eastern Agricultural College, Wye.
61	W. Hubball, M.Sc. (Tech.), A.I.C.	"Manchester Guardian Commercial."
62	*Principal J. F. Hudson, M.A., B.Sc.	Association of Technical Institutions, Loughborough.
63	Miss D. W. Hughes.	Career Advisory Bureau.
64	E. Wyndham Hulme, B.A.	
65	R. S. Hutton, D.Sc.	British Non-Ferrous Metals Research Association, Birmingham.
66	Mrs. R. S. Hutton.	
67	A. B. Hyslop.	Carnegie United Kingdom Trust, Dunfermline.
68	Miss E. M. Irby.	Union of Post Office Workers.
69	Miss P. M. Isaacs.	
70	H. L. Jackson.	H. K. Lewis and Co., Ltd.
71	A. H. Johnson, M.A.	Squire Law Library, Cambridge.
72	Miss F. Johnson.	
73	H. H. Johnson, A.M.I.Mech.E., A.M.I.E.E., Wh.Ex.	"Engineering," Ltd.
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75	Henry S. Johnson.	Plattsburgh Public Library (N.Y.).
76	C. H. Kemp.	
77	Miss D. Knight, B.A.	National Institute for Research in Dairying, Reading.
78	Prof. Dr. Ing. G. Kögel.	

79	Miss A. L. Lawrence, M.B.E., M.A., LL.B.	British Medical Association.
80	Evans Lewin, M.B.E., F.L.A.	Royal Colonial Institute Library.
81	*E. M. H. Lloyd.	Empire Marketing Board.
82	E. E. Lowe, Ph.D., B.Sc., F.L.A.	Leicester City Libraries.
83	Colonel Sir Henry G. Lyons, F.R.S.	(*a*) Science Museum. (*b*) Institut International de Bibliographie. (*c*) Geographical Association.
84	John McAdam, F.L.A.	Warrington Municipal Library and Museum Committee.
85	W. H. Macaulay, M.A.	
86	J. G. Macleod, F.C.I.S.	Rio Tinto Co., Ltd.
87	Mrs. J. G. Macleod.	
88	A. Markham.	(*a*) German Information Bureau. (*b*) Leipzig International Industries Fair.
89	Edward A. Martin, F.G.S.	Croydon Public Libraries Committee.
90	H. H. B. Meyer, E.M., Litt.D.	American Library Association.
91	E. H. Minns, Litt.D.	
92	*Miss C. Mitchell.	Labour Party and Trades Union Congress Joint Library.
93	Brig.-Gen. Magnus Mowat, C.B.E., M.Inst.C.E., M.I.Mech.E.	(*a*) Institution of Mechanical Engineers. (*b*) Association of Technical Institutions, Loughborough.
94	R. H. New.	Clarendon Press, Oxford.
95	Lt.-Colonel L. Newcombe, T.D., F.L.A.	(*a*) Central Library for Students. (*b*) Education Guild of Great Britain and Ireland.
96	S. J. Nightingale.	Metropolitan-Vickers Electrical Co., Ltd., Manchester.
97	Miss R. E. Omash.	Conservative and Unionist Central Office.
98	A. E. Overton, M.C.	Board of Trade.
99	Miss E. W. Parker.	Mond Nickel Co., Ltd.
100	H. Parkinson.	"The Economist."
101	Norman Parley.	Percy Lund, Humphries and Co., Ltd., Bradford.
102	*Miss Mary P. Parsons.	Ecole de Bibliothécaires, Paris.
103	G. H. Pateman.	Workers' Educational Association.
104	J. G. Pearce, B.Sc., M.I.E.E.	British Cast Iron Research Assocn., Birmingham.
105	Mrs. J. G. Pearce.	
106	Miss E. M. Phelps.	H. W. Wilson Co., New York.
107	S. S. Pickles, D.Sc., F.I.C.	Research Association of British Rubber and Tyre Manufacturers, Croydon.
108	F. G. Plaistowe, M.A.	
109	B. D. Porritt, M.Sc., F.I.C., F.R.S.E.	Research Association of British Rubber and Tyre Manufacturers, Croydon.
110	H. Potts, M.Sc. (Chartered Patent Agent).	Convocation of Liverpool University.
111	Miss E. N. Powell.	International Alliance of Women for Suffrage and Equal Citizenship.
112	J. F. Pownall.	
113	E. J. Pyke, M.A.	National Institute for the Blind.
114	Mrs. C. D. Rackham.	
115	F. R. Richardson.	Boots Pure Drug Co., Ltd.
116	Mrs. F. R. Richardson.	
117	A. F. Ridley, F.L.A.	British Non-Ferrous Metals Research Association, Birmingham.
118	*Mrs. A. F. Ridley.	
119	H. L. Robinson.	Textile Institute, Manchester.
120	Ernest I. Robson, M.A.	Institute of Agricultural Engineering, Oxford.
121	H. Rogers.	Institution of the Rubber Industry.
122	Prof. J. C. van Rooy, M.A.	

123 H. Rottenburg, M.A., M.I.E.E.	London Instrument Co., Ltd., Cambridge.
124 Miss M. Rushton.	Metropolitan-Vickers Electrical Co., Ltd., Manchester.
125 Miss M. M. Savill.	Fine Cotton Spinners' and Doublers' Association, Ltd., Macclesfield.
126 *Sir William Schooling, K.B.E.	
127 G. F. Schwartz.	London and Cambridge Economic Service.
128 G. Shaw Scott, M.Sc.	Institute of Metals.
129 Miss G. Searight, B.A.	League of Nations Union.
130 E. L. Sellars, M.C., M.Sc.	Brunner, Mond and Co., Ltd., Northwich.
131 Henry A. Sharp, F.L.A.	Croydon Public Libraries.
132 Mrs. H. A. Sharp.	
133 R. L. Sheppard.	Bureau of Hygiene and Tropical Diseases.
134 F. S. Smith, M.L.A.	Association of Assistant Librarians.
135 Councillor W. H. Smith.	City of Leicester Public Libraries Museum and Art Gallery.
136 Miss E. Snowden.	British Thomson-Houston Co., Ltd., Rugby.
137 Alderman Charles Squire.	Leicester Museum and Libraries Committee.
138 Miss C. Stenhouse.	British Non-Ferrous Metals Research Association, Birmingham.
139 Miss E. Stiff.	Royal Institute of International Affairs.
140 Miss P. Strachey.	London and National Society for Women's Service.
141 F. W. Tattersall.	
142 Sir J. J. Thomson, O.M.	Master of Trinity College, Cambridge.
143 A. P. Thurston, D.Sc., F.R.Ae.S., M.I.A.E., M.I.Ae.E., A.M.I.Mech.E. (Registered Patent Agent).	
144 *O. Thyregod, M.A.	(*a*) Special Libraries Association of Denmark. (*b*) Industrial Library, Copenhagen.
145 F. J. du Toit, B.A.	South African Board of Trade and Industries, Pretoria.
146 R. J. Tregaskis.	Dennison Manufacturing Co., Ltd.
147 Mrs. R. J. Tregaskis.	
148 E. H. Tripp, Ph.D.	Nitram, Ltd.
149 P. K. Turner, A.M.I.E.E., M.I.R.E.	Graham Amplion, Ltd.
150 A. E. Twentyman, B.A., F.L.A.	British Institute of Adult Education Library.
151 Major L. Urwick, O.B.E., M.C., M.A.	Management Research Groups.
152 Dr. J. E. de Vos van Steenwijk.	International Institute of Intellectual Co-operation, Paris.
153 T. Wadsworth, M.Sc.	British Thomson-Houston Co., Ltd., Rugby.
154 J. Wendell.	Photostat, Ltd.
155 *John Wilks, M.A.	Joint Standing Committee on Library Co-operation, Birmingham.
156 *Mrs. J. A. Wilks.	
157 G. B. Willey, A.R.S.M., F.I.C.	Hadfields, Ltd., Sheffield.
158 J. C. Withers, Ph.D.	(*a*) British Cotton Industry Research Association, Manchester. (*b*) Textile Institute, Manchester.
159 A. R. Wright, I.S.O., F.S.A.	Folk-lore Society.
160 C. R. Young, O.B.E., D.Sc.	Department of Scientific and Industrial Research.
161 A. Zaiman, B.A., F.S.S.	Building Research Station, Department of Scientific and Industrial Research.

Supplementary Lists.

162 Miss I. Blackwell.	Trades Union Congress General Council.
163 Miss L. de M. Carey.	General Information Bureau.
164 Miss D. Crowther.	Labour Party and Trades Union Congress Joint Library.
165 J. Marshall Hall.	Anglo-Persian Oil Company, Ltd.
166 A. Love.	Venesta, Ltd.
167 Mrs. Charles McCarthy.	Wisconsin Free Library Commission (Legislative Reference Division).
168 M. R. Metcalf.	Horace Plunkett Foundation.
169 E. Saville Peck.	Cambridge Borough Free Library.
170 J. G. Pritchard.	Venesta, Ltd.
171 Gilbert H. Richardson.	International Language (Ido) Society of Great Britain.
172 R. H. Simpson.	American University Union.
173 Miss L. Stubbs, B.A.	
174 K. Walter.	Horace Plunkett Foundation.
175 S. C. Bradford, D.Sc.	Science Museum.
176 E. G. W. Braunholtz.	
177 N. T. Carne.	Alfred Graham and Co., Ltd.
178 J. G. Crowther.	Oxford University Press.
179 A. S. Fitzpatrick, M.Sc., D.I.C.	Office of the High Commissioner for Australia.
180 P. Sargant Florence, D.Sc.	
181 F. Grant.	Empire Marketing Board.
182 Miss E. M. M. Haynes.	
183 Rt. Hon. Sir Horace Plunkett, K.C.V.O., F.R.S., D.C.L., LL.D.	(*a*) Carnegie United Kingdom Trust, Dunfermline. (*b*) Horace Plunkett Foundation.
184 A. L. Rowse.	
185 R. S. Spicer.	Soc. of Motor Manufacturers and Traders, Ltd.
186 H. C. Stanford, M.A.	University Library, Cambridge.
187 Miss J. Walsh.	Cambridge Training College for Women.
188 Miss Mary H. Wood.	Cambridge Training College for Women.

* Prevented from attending.

EDITORIAL NOTE.

The papers that follow constitute a record of the proceedings of the Fourth Conference of the Association. The meetings may be said to have been of three kinds: general sessions, sectional meetings, and informal discussions. In the case of the first two, all the papers presented were preprinted and were taken as read, the authors introducing their papers with a short résumé, bringing out the main points. In the case of the informal discussions no detailed report was kept, with the result that members taking part in these discussions were in a position to speak with greater freedom than would otherwise have been the case.

It will, of course, be understood that opinions expressed in the papers presented are those of the authors themselves, and cannot be taken necessarily to represent the views of the Association as a whole.

By kind permission of the authorities, visits were paid by a number of those attending the Conference to the Cambridge University Library and to the University Press.

Those desiring copies of the Reports of the three earlier Conferences or detailed particulars with regard to the "ASLIB Directory" that is to be published in the Spring of 1928 are asked to communicate with the Secretary at the address given below.

The Association was incorporated under the Companies Acts (1908-1917) towards the close of the year 1927 as a Company not for Profit and Limited by Guarantee.

38 Bloomsbury Square,
London, W.C.1.

CONTENTS

FRIDAY, September 23rd, 1927. PAGE.

RECEPTION by the Master of Trinity, SIR J. J. THOMSON, O.M. 14

OPENING DINNER. Speech by SIR GEOFFREY BUTLER, K.B.E., Senior M.P. for Cambridge University (President of the Conference) 14

OPENING (GENERAL) SESSION.

Chairman: MR. J. G. PEARCE, B.Sc., M.I.E.E. (Director, British Cast Iron Research Association).

(1) **Report of Progress of ASLIB.**
MR. J. G. PEARCE (Chairman of the Council of the Association) 17

(2) **The Report of the Public Libraries Committee of the Board of Education**; with particular reference to the place of the special library in a National Information Service 21

(i) MR. A. E. TWENTYMAN, B.A., F.L.A. (a member of the Public Libraries Committee and Librarian of the British Institute of Adult Education), and

(ii) LT.-COLONEL L. NEWCOMBE, T.D., F.L.A. (Librarian, The Central Library for Students) 23

Discussion ... ...

SATURDAY, September 24th, 1927.

GENERAL SESSION.

Chairman: MR. P. K. TURNER, A.M.I.E.E., M.I.R.E. (Graham Amplion, Ltd.).

The ASLIB Directory of Sources of Specialized Information; its Scope and Use 28

In the unavoidable absence of Mr. G. F. Barwick, B.A. (General Editor, late Keeper of Printed Books, British Museum), the report was given by the Chairman.

Co-operation between Libraries, Government Departments, Political Societies, and other special Institutions. MR. B. M. HEADICAR, F.L.A. (Librarian, London School of Economics and Political Science) 30

Discussion opened by MR. PERCY COHEN (Conservative and Unionist Central Office) 32

SATURDAY, September 24th (contd.).

INFORMAL DISCUSSIONS. PAGE

(A) **Printing, Reprinting, and Abstracting Scientific Literature: possible economies.**
Introduced by MR. H. L. ROBINSON (Editor, "The Journal of the Textile Institute")... 34
Discussion on this topic was continued at an adjourned session held the same evening, concurrently with the other informal discussions.

(B) **The Reference Libraries of London: is a co-operative catalogue a practical proposition?**
MR. F. S. SMITH (Hon. Editor, "The Library Assistant")... 34

(C) **Library liaison within the Empire.**
Introduced by MR. H. O. FRIND, F.R.G.S., and MR. PERCY COHEN (Conservative and Unionist Central Office) 39

SECOND ANNUAL GENERAL MEETING of Members and Associate Members of ASLIB ... ... 39 and 168

INFORMAL DISCUSSIONS.

(A) **Education.**

(1) **School Libraries in U.S.A.**
Introduced by Dr. H. H. B. MEYER (American Library Association) 40

(2) **Libraries and the Teaching Service.**
MR. F. A. HOARE (National Union of Teachers) ... 40

(B) **The necessity for uniformity in the cataloguing of periodicals.**
DR. W. BONSER (Medical Sciences Library, University College, London). Discussion introduced by MR. J. F. POWNALL, and MISS H. A. BALL (International Standard Electric Corporation) 44

GENERAL SESSION.

Chairman: SIR RICHARD GREGORY, D.Sc., F.Inst.P., F.R.A.S. (British Science Guild) 49

Recent developments in connexion with the Science Library, South Kensington.
By Colonel SIR HENRY G. LYONS, F.R.S., Director, The Science Museum.
In the unavoidable absence of the author, owing to illness, the paper was presented by Dr. S. C. Bradford (Keeper, The Science Museum).

Brief statements on the work of the International Institute of Intellectual Co-operation (Paris), the International Institute of Bibliography (Brussels), the Nederlandsch Instituut voor Documentatie en Registratuur (Deventer, Holland), the Commission Internationale de la Classification Décimale, the

SATURDAY, September 24th (contd.).

Special Libraries Association of Denmark, the Carnegie United Kingdom Trust, the World List of Scientific Periodicals, the Notgemeinschaft der Deutschen Wissenschaft, the Special Libraries Association (of America), and the American Library Association ... ... PAGE 53 to 67

SUNDAY, September 25th, 1927.

SECTIONAL MEETING (A).

Chairman: MR. S. J. NIGHTINGALE (Research Department, Metropolitan-Vickers Electrical Co., Ltd).

INFORMATION, ORGANIZATION, AND STATISTICS IN COMMERCE AND INDUSTRY.

(1) **Rationalization in Industry.**
MAJOR L. URWICK, O.B.E., M.C., M.A. (Honorary Secretary, Management Research Groups) 68

(2) **Statistical Analyses in the Engineering Industry for use in the formation of a Sales Policy.**
MR. S. J. NIGHTINGALE and MISS A. L. BENNIE (Research Department, Metropolitan-Vickers Electrical Co., Ltd.) 77

(3) **Cotton Statistics; their relation to marketing and market estimating.**
MR. F. W. TATTERSALL 85

(4) **Trade Information and Statistics in Great Britain as compared with other countries.**
MR. A. E. OVERTON, M.C. (Principal, Board of Trade) 90

(5) **The Trade Survey.**
Mr. F. HALL, B.Sc. (Econ.) (Assistant Economist, British Electrical and Allied Manufacturers' Assocn.) 105

(6) **Business Forecasting.**
MR. W. WALLACE, B.Com. (Lond.) (Economic Adviser, Rowntree & Co., Ltd.) 111
In the unavoidable absence of Mr. Wallace, the paper was presented by Major L. Urwick.

SECTIONAL MEETING (B).

Chairman: MR. E. WYNDHAM HULME, B.A. (late Librarian, Patent Office).

PATENT CLASSIFICATION.

Office practice in respect of the principles of classifying, and the methods of searching Patent

SUNDAY, September 25th (contd.).

Specifications in Great Britain, Germany, and the United States of America. PAGE

(A) In Great Britain:

(i) Statement concerning the British Patent Office by MR. A. R. WRIGHT, I.S.O., F.S.A. (late Assistant Comptroller, Patent Office) 119

(ii) Publication of the British classification and indexes, with special reference to the extent to which facilities are made available to the Public. MR. A. GOMME (Librarian, Patent Office) ... 126

(B) In Germany:
Statement submitted by the Reichspatentamt, Germany, together with a translation 133

(C) In United States of America:
Statement submitted by the United States Patent Office 137

General Discussion opened by:—
DR. A. P. THURSTON, F.R.Ae.S., M.I.A.E., M.I.Ae.E., A.M.I.Mech.E., and
MR. H. POTTS, M.Sc. 139

SECTIONAL MEETING (C).

Chairman: DR. J. C. WITHERS (British Cotton Industry Research Association).

PROBLEMS OF THE INFORMATION BUREAU.

(1) **Information Bureaux and liaison with national and local libraries.**
MR. A. F. RIDLEY, F.L.A. (Librarian, British Non-Ferrous Metals Research Association) 140

Discussion ... ...

(2) **The Special Library from the administrative standpoint, with special reference to methods of indexing and filing.**
MR. P. K. TURNER, A.M.I.E.E., M.I.R.E. (Assistant Chief Engineer, Graham Amplion, Ltd.) 146

SUNDAY, September 25th (contd.).

Discussion opened by: PAGE

MR. FOSTER SPROXTON (Chief Chemist, British Xylonite Co., Ltd.) [contributed], and

MISS M. M. SAVILL (Librarian, Fine Cotton Spinners' and Doublers' Association) 150

(3) **The Information Bureau in relation to the Consultant.**

Note by DR. J. C. WITHERS 152

Discussion ... ...

(4) **The arrangement of books in a comprehensive textile library.**

MR. H. L. ROBINSON (Editor, "The Journal of the Textile Institute")... 153

Discussion ... ...

INFORMAL DISCUSSIONS.

(1) **New Methods of Photographic Reproduction as applied to printed and MS. material.**

Introduced by:—

MR. N. PARLEY (Percy Lund, Humphries & Co., Ltd.), and

MR. R. H. NEW (Clarendon Press) 159

(2) **A Panel of Expert Translators.**

Introduced by:—

DR. R. S. HUTTON (Director, British Non-Ferrous Metals Research Association) 159

GENERAL SESSION:

Part I. Chairman: BRIG.-GENERAL MAGNUS MOWAT, C.B.E., M.Inst.C.E., M.I.Mech.E. (Institution of Mechanical Engineers).

Standards of Book Selection in Science and Technology.

SIR RICHARD GREGORY, D.Sc., F.Inst.P., F.R.A.S. (British Science Guild: Editor of "Nature") 160

Discussion ... ...

Part II. Chairman: MR. J. G. PEARCE, B.Sc., M.I.E.E. (British Cast Iron Research Association).

RESOLUTIONS 166

VOTES OF THANKS 167

REPORT OF ANNUAL GENERAL MEETING... 168

ACCOUNTS FOR THE YEAR ENDING JUNE 30, 1927 ... 170

The Association of Special Libraries and Information Bureaux.

FOURTH CONFERENCE.

The Conference opened with a Reception by the MASTER OF TRINITY (Sir J. J. Thomson, O.M.).

At the conclusion of the opening Dinner, Sir GEOFFREY BUTLER, K.B.E., M.P., President of the Conference, after preliminary expressions of thanks to Trinity College, to the writers of the papers, and to the officials of the Conference, proceeded as follows :—

This is the Fourth Annual Conference of the Association, and the year which separates us from our last meeting has produced more than one event calculated to stimulate us in our endeavours. Perhaps a Presidential address cannot be better employed than in referring to some of them.

I wonder if you noticed that, on his own confession, Mr. Baldwin during his recent felicitous journey to Canada set himself the task of putting before the Canadians a true picture of what was happening in British industry and commerce. He begged his audiences not to single out for observation those industries especially unfortunately placed, and build upon such observation a melancholy estimate of the future industrial position of our country. The Prime Minister again and again described Great Britain as undergoing a vast industrial transformation. He spoke of our masters and men as people who were groping towards a new outlook, people very ready to employ novel methods, to exploit new markets and to adopt unprecedented practices of publicity, mass production, and organization of man power. In so general a development and in a country fortunately wedded to tradition, there was bound to be some unevenness of progress, bound to be some too rash and others over laggard. But it was the conviction of that cautious statesman that so far from senility or decay were these islands that when a full understanding of the situation had penetrated into the minds of our fellow countrymen, they would, as in the war, astonish the gloomy prophets of the world once more—that we were at the opening of a fresh and glorious chapter in our history.

Vast transformations, always hard to appreciate, are sometimes best measured by tiny symptoms. I claim as your President that in the light of Mr. Baldwin's message to Canada there is significance in the constantly growing use that is being made of our Association by the controllers of those industries, those business houses which have a public reputation for drive, push, enlightenment. It is shown by the growing number of applications for affiliation which reach us from the special libraries and bureaux of firms all over the country. It is shown by ever increasing contact with Government Departments, such as that of Scientific and Industrial Research, the Patent Office, or the

Board of Trade. It is not for nothing that men like Sir Frederic Kenyon and Sir Ernest Rutherford have found time to give their blessing to the projected "ASLIB Directory"—that guide to the sources of specialized information in Great Britain and Ireland—which we hope so soon now to see published. We are quietly, I hope, justifying the congratulatory anticipations expressed by Sir Philip Cunliffe-Lister two years ago at the prospect of an approach towards "co-ordination and systematic use of information and library services."

There may well be, not perhaps in this audience but outside, some cynics and doubters who see in our movement but one more pretentious attempt at co-ordination on the part of busybodies who are never so happy as when they are trying to link up activities which have always got on very happily up to the present upon their own. It was with some such reflection present to my mind that I set about ascertaining actual instances of useful service rendered by the Association; I desired to satisfy myself by genuine and wholly practical proofs that the value of the existence of a body such as ours may be expressed in terms of filthy lucre. We may leave the scholar and the scientist to be convinced, if it be necessary, on other occasions and by other means. I leave the following examples to tell their own story :—

A large industrial concern was anxious to obtain accurately the prices in the United States for Coal Tar, Pitch, and Bitumen extending over the period 1920 to 1926. It was known that these were given in a certain American periodical, and reference to the "World List of Scientific Periodicals" had indicated that there were two centres in England at which this paper was taken in. Unfortunately at neither of these was filed the run of years in question. The inquiry was urgent, and time did not permit of cabling for a copy. It was due to our organization that a third set was found.

From Canada came a request for a list of standard books to the number of anything between five and twenty thousand for a public library. From India a co-operative society asked for the names of periodicals on co-operation, economics, and agriculture. A Government Department wished to know the places in England at which anthropometric work is in progress. A great company at work in the Near East wished to have a scientific paper turned up for it. A Japanese firm desired scientific information which might well have led to the placing of orders in England. Could we find an expert translator for Russian engineering articles, comes one inquiry. What is the present law in the United States and Germany regarding the erection of fish offal factories in populous areas queries a firm across the Tweed.

It is then, first of all, one result of the past year's experience that we see good reason to hope that more and more Englishmen of business will follow the example of certain big and progressive firms in paying attention, and devoting more and more money, to their library or information department; and will insist on its making use of the clearing-house, which the efforts of our Association are building up, and without which the radius of its action is restricted.

There is one other event of the year which I should like to mention. The able Committee under the Chairmanship of Sir Frederic Kenyon, has issued its Report on Public Libraries in England and Wales. In its three hundred and fifty pages there is for my audience much food for thought, particularly in the fourth chapter. We greatly appreciate the words of friendly encouragement which the Committee is good enough to use about us in paragraph 379. The relation of our Association to the Central Library and to the Science Library at South Kensington, and the recommendations of the Kenyon Committee on these points, is one which will occupy not a little of your attention at this Conference.

Lastly in the thought of everyone here present is the desire to know what progress has been made with the "ASLIB Directory." Unfortunately neither the learned Editor nor his assistant have been entirely free from ill-health during the current year, and completion of the first edition has in some minor degree been held up; you will, however, appreciate the importance of my saying that the printers have been kept busy, that three-quarters of the book is in type, that the editorial preface of Mr. Barwick has been received, as have also the introductions of Sir Frederic Kenyon and of Sir Ernest Rutherford.

And so, Ladies and Gentlemen, conscious, I hope, of an atmosphere of energy in our Association I invite you to proceed upon your labours.

A telegram was read from Miss Alexander, Vice-President of the Special Libraries Association of North America, regretting her inability to attend the Conference as she had hoped to do, and conveying cordial greetings.

OPENING (GENERAL) SESSION.

Friday Evening, September 23rd, 1927.

REPORT OF THE PROGRESS OF ASLIB.

By J. G. PEARCE, B.Sc., M.I.E.E. (Chairman of the Council).

Three years ago a group of enthusiasts had an idea. From that idea sprang the Hoddesdon Conference, and from the Hoddesdon Conference sprang ASLIB.

The enthusiasts mentioned were all concerned intimately and vitally with the collection and dissemination of information of a highly specialized character in their varying fields: their concern was with libraries covering a small specialized field of no great concern (albeit of great ultimate importance) to the general public and with information bureaux designed to meet the needs of a small group of persons or interests. They were forcibly struck by the lack of guiding principles, of any common experience on which to work, and by the absence of co-operation between the numbers of people who must certainly be struggling with the same problems and facing the same difficulties as themselves. The information possessed by this or any other country—its intellectual capital—consists for the most part of printed knowledge scattered in a thousand minor repositories, some of it extremely rare, some duplicated far beyond requirements. But between these different repositories of fact-information there seemed to be almost complete lack of contact, in spite of a general willingness to share the knowledge they embodied.

The idea that came to us was roughly this—that by the linking up of those who could supply and those who could use all these scattered morsels of specialized information (and a supplier of one kind is a user of another kind), surely a considerable economy of effort could be secured, leading ultimately to a tremendous advance in knowledge itself, for undocumented, untapped knowledge is sterile, and can only play an active part in the mental and intellectual life of the community when it is brought into the light of day and its existence advertised to all who may be interested or able to make use of it. It was felt that, even in the mere interchange of experience in such similar fields, each individual would stand to gain enormously. Matters of routine, filing, indexing, arrangement, classification, and so on, would be, in a measure, both ends in themselves and stepping-stones to a consideration of co-operation and mutual effort on a larger scale. We desired to establish the principle we labelled "free trade in non-confidential information" and also the machinery to make that exchange effective.

How far, then, was this idea one of real practical value and importance? To put the question to the test and to find out what public support it was likely to receive, the Hoddesdon Conference was promoted, and out of that small beginning sprang ASLIB, unanticipated and almost unintended.

Certainly the promoters of that first Hoddesdon Conference

had not the least intention of founding a new association or institution, the height of our ambition probably being such a forum for interchange of ideas and mutual acquaintance as this Conference provides. Indeed, the idea of any separate existence only arose at a much later date when the question of the ownership of the Directory became pressing, and as this was likely to prove a valuable piece of property the point could hardly be overlooked. Although in this matter our hand was forced, there is still no intention, any more than there was three years ago, of forming a highly individualized type of association, with elaborate head-quarters, and a large head-quarters staff, with branches holding regular meetings and all the other apparatus of the species. The most that was contemplated when the original idea was formulated was that there should be some sort of clearing-house for specialized information: a common ground whereon all those interested in the collection and dissemination of specialized information could meet and discuss their problems, pool their experience, and endeavour thereby to arrive at some mutual profit and some clearer understanding of the scope of their work, with the addition perhaps of a few local meetings to arouse interest and support. It would indeed be impossible for so varied a collection of people as ASLIB has from the first attracted to form a satisfactory association of any other type: they represent men and women of far too divergent outlook, far too varied activity. They invariably have group relationships with their professional colleagues. They may be trained librarians working on the well-understood lines, or amateurs who have had to develop their library technique out of the needs of the day: they may be the heads of independent information bureaux, or people of many-sided activity to whom the collection of information in a certain field has become incidental to its use: they come from the world of business and from learned societies, from Government Departments and from the academic world, and it is the very simplicity of the basis on which ASLIB works that makes it possible for such variety to be brought together on common ground. ASLIB as a clearing-house, in any sense of the term, is effective only in and through that diversity, and the creation of any more orthodox association would be unnecessary and undesirable.

Nor was it ever contemplated that ASLIB should become a vast central repository of information. There are already many organizations concerned with the actual collection of the information itself, and what was in our minds was rather something in the nature of a telephone service, with ASLIB as the central exchange. In this way ASLIB's function would be not to answer inquiries, but rather to act as directory with the Secretary as operator, its business being to know where information of any given type or on any given subject might be found, and to tell an inquirer how and where to seek it. To establish this object it is clearly necessary, first, that the exchange should exist; secondly, that the directory should be compiled on thoroughly adequate, reliable, and efficient lines; and thirdly, that all those likely to benefit by such an arrangement should become subscribers.

I am happy to be able to say that our original idea has so far

justified itself that we are now in possession of the exchange, in the shape of our head-quarters, already scarcely adequate for the work it has to do: of the Directory, which is nearly ready to be issued: and of a growing roll of subscribers who will receive it.

The first simple beginning at Hoddesdon was a revelation of the number and the diversity of the organizations and individuals interested in this matter of specialized information. All thinking sections of the community were represented, and not merely were they represented, but took active and interested part in the proceedings. Those of you who have attended previous Conferences will be aware that, as a result of the immense common interest and ground for fruitful discussion revealed at Hoddesdon, a Committee was formed in order to promote those interests and to see that the valuable opportunity of contact and interchange of ideas afforded by this first Conference should not be allowed to dissolve into thin air.

What has that Committee achieved? It was formed easily and spontaneously enough, but as it stood it had little power to do anything. We were, indeed, an engine without petrol until the Carnegie Trustees came forward and made us a grant of over £2,000 spread over the first four years in order to cover the necessarily difficult period of initiation. We were thus enabled to secure a small office and to appoint Mr. Keeling as Secretary, and subsequently two highly successful Conferences were organized at Balliol in 1925 and 1926. For a variety of reasons, however, some of which are dealt with above, we did not actively seek members until 1926. We had to consider, among other things, the feelings of our friends in the Library Association, and it was only after full discussion with them that a separate constitution was decided upon.

The Balliol Conferences were extremely successful, and were given considerable publicity, and there was, in addition, a process of personal recommendation which was bound to strengthen ASLIB. The Committee became considerably strengthened. We began accordingly to try to realize our primary idea—the formation of a Directory of specialized sources of information. Once again the Carnegie Trustees came to our aid, and granted us £2,000 for this work. We were thus in 1926 able to appoint Mr. Barwick as Editor and Miss Durrad as Assistant Editor, Mr. E. W. Hulme acting as Honorary Consulting Editor. At the present time the Directory has reached the stage of printers' proofs, and only awaits the approval of experts in each of the subjects dealt with before proceeding to final printing.

We have also recently been constituted as an Incorporated Association limited by guarantee. Membership we desire to be open to all who can offer as qualification a daily concern with and interest in our field of work, and we want the fee to remain low enough to convince people that our object is not so much to do something for them as to provide them with the means of doing something for themselves. We have so far progressed as to be sure of an income of nearly £600 per annum derived from 320 members. In order to carry on we require the sum of £1,000 a year, which means, at our existing subscription rates, doubling

our existing members; moreover, if we are to secure this before our slender resources are exhausted, we need those members at the rate of four per week for the next eighteen months.

CONCLUSION.

Let me make our position clear. We are in competition with no other body. We represent no sectional interest. We represent all readers and users of information, all workers in the field of specialized libraries and information bureaux, and we bring them together on common ground that is covered by no other existing organization. We have naturally sought and secured active co-operation with many other bodies in adjacent fields, and their work will frequently be referred to during the Conference. The ties we have already established with such organizations will, we hope, be further strengthened in the future.

What we have done is not a great deal, but the work entailed therein has been very considerable, and even that would have been impossible without the self-sacrificing labour of Council members. I took office as Chairman in 1926 with considerable diffidence and under pressure from my colleagues on the Committee as it then existed. Circumstances over which I can fairly say I had no control prevented my attendance at either Conference at Balliol, and being here to-day therefore gives me peculiar pleasure. But I feel very strongly that the office of Chairman must not be held unduly long by any one person, and hence I have asked the Council to appoint another Chairman at the next Conference. They have urged on me that we are not yet quite clear of the wood, with regard both to the Directory and to incorporation, but I feel confident that we very soon shall be. ASLIB will survive not because a few enthusiasts were sufficiently energetic and sufficiently well supported to give to an idea a local habitation and a name, but because it possesses a fundamental capacity to adapt itself to the existing needs of the interests it represents. Through its Chairman, therefore, it must have at its disposal in due course the whole of that extraordinary variety of experience represented on the Council, and this cannot be effectively ensured unless the Chairmanship is held in rotation by a number of members.

For ASLIB has come to stay. Already it is strongly entrenched in the interests of a large number of people, who find in it a point of contact with each other and each other's work that they can find nowhere else. Just because we work to no elaborate programme, and have no formal meetings, does the Annual Conference assume a greater importance and significance. For whatever our progress may be, and whatever lines it may take, it must be by our very nature essentially a progress from Conference to Conference. This 1927 Conference represents a new chapter—the fourth chapter, to be exact. It has been opened by a graceful and felicitous address from our President in the sympathetic environment of this ancient foundation; and I think there is every promise that it will prove not by any means the least interesting or significant of our chapters.

THE REPORT OF THE PUBLIC LIBRARIES COMMITTEE OF THE BOARD OF EDUCATION, WITH PARTICULAR REFERENCE TO THE PLACE OF THE SPECIAL LIBRARY IN A NATIONAL INFORMATION SERVICE.

I. By A. E. TWENTYMAN, B.A., F.L.A.
(A member of the Committee and Librarian of the British Institute of Adult Education).

Discussing the Report of the Departmental Committee on Public Libraries with a friend connected neither with the Library world nor with local administration, I was told that the Committee were no wiser than Simple Simons if they believed that Local Authorities were likely to be guided in their actions by any spirit of altruism. He seemed to think that, while Governments might occasionally be swayed by a fit of generous emotion, local bodies were too careful of their material interests to part with any portion of their autonomy, unless the surrender were softened by the offer of a *douceur,* financial and substantial, from a superior authority. There are others who, thinking less meanly of our local bodies, nevertheless appear puzzled by the absence of any proposals for a large increase in expenditure. Seemingly by this omission the Committee stand self-condemned, unless they are prepared to creep behind the shield publicly offered to them of mysterious whisperings by someone to somebody, that abstention from extravagances of this kind would prove to be the path of wisdom. All one can say is that none of these mutterings were audible in the committee room, where full liberty prevailed to propose the expenditure of a million of money if any member felt so minded. That the Committee failed to make any but very modest demands upon the Treasury should not be imputed to them as a neglect of opportunity and duty.

Though the opportunity in the present financial situation was not a very wide one, the Committee may not unfairly hope some credence will be placed in the honesty of their conviction that, within the present limits of financial support a vastly improved service may be secured to the majority of the users of Public Libraries. If the contention of the Committee is justified it should be a message of considerable encouragement to the institutions here represented, since most of them do not enjoy, and probably do not desire, grants of public money. If the Public Library service can be so improved without any considerable increase of expenditure it is probable that the application of the same means to the independent libraries may be equally fruitful in its result.

The life-giving principle by which it is hoped to convert a series of isolated institutions, often of low vitality, into a national system functioning with equal vigour in all its parts, is a simple one, and one which is constantly being advocated in various

spheres of our national life. It is closer organization and willing co-operation. Its validity has been proved in the field of education, as those can testify who are able to recall the plight of our secondary schools at the beginning of the present century. There is no reason why, within an even shorter space of time, we should not have a library system giving an equally effective service to the whole of the nation. As the great Public Schools, by their intercourse with the Board of Education and by the sympathy they have extended to their fellow workers in humbler spheres, have contributed to the realization of the hopes which the Act of 1902 aroused, so we have the certainty that our national library institutions will not be backward in helping on the work of library unification. There could be no better guarantee of sureness of this hope than the readiness with which Sir Frederic Kenyon has placed all his great abilities at the disposal of the library interests of this country. It is impossible to overrate the value of his services to the movement during the present period of re-orientation.

It is but just that at this meeting recognition should be accorded to the supreme service which the Carnegie United Kingdom Trust has rendered to the Library cause in these islands. Without their clear vision and persistent courage the dwellers of the countryside would still be languishing with as inadequate a supply of books as ever disgraced a civilized country. Other services of the Trust are too well known to members of this Association to need recall, and our gratitude for their ever-ready help is deep and lasting.

It must not be assumed, however, that the absence of any recommendation of an immediate large increase of expenditure implied satisfaction with the present conditions. Far from it. Out of the mass of information supplied in answer to the questionnaires (and still more significantly out of the silences) it was evident that a considerable number of libraries, if not actually inefficient, were not giving a service commensurate with the needs of their clients. This insufficiency was not always recognized. An urban district of 10,000 inhabitants which spent nothing on books did not appear to have any misgivings, and another of 40,000, spending £9 a year on books, stated that the libraries of that district appeared to afford all that had hitherto been demanded; even if this had been the case it is to be hoped that it will not remain so. The Committee realized that with the growing complexity of the demands even libraries of considerable size could not hope to satisfy all their readers' needs.

The remedy could not lie in the development of all libraries to self-sufficing units, even if it were financially possible; it would be extremely wasteful, profitable only for the publishers. The way out is to secure the maximum service from each book, and this can be achieved only by co-operation, which would, if effective, establish a national system.

This national system, the Committee say, should be built up on (i) voluntary co-operation between neighbouring libraries; (ii) the grouping of public libraries round regional centres, which will generally be great urban libraries; (iii) a federation of special

libraries, pooling their resources in the service of research; with (iv) the Central Library acting as a centre of the whole system.

It will perhaps be regretted by this meeting that the Committee did not elaborate the third point. There is no discussion of the means by which it should be attained—indeed the terms of reference given to the Committee excluded the consideration of any but public libraries. The greater number of the research libraries are not public institutions in the sense that they are supported, even in part, out of public funds. There are, however, certain suggestions in the Report which do concern the research worker very closely. There is a strong recommendation that sufficient financial help should be given to the Science Library to enable it to supply its most notable deficiencies. The benefit which such a library could confer on research workers now that it is prepared to lend to readers in accredited institutions cannot be estimated too highly, and the additional £3,500 a year suggested is a small sum to pay for such a service.

Great as the collections of the Science Library are, they will not meet all the needs of those engaged in special lines of research. No science is to-day self-contained, and each impinges on an increasing number of its fellow sciences. Consequently, the researcher needs some instrument which will help him to locate the nearest source from which he can get the book or journal he needs. The instrument exists, though it has not yet developed its full power. This is the Central Library. The discussion of its possibilities forms the most attractive portion of the Departmental Report. This Colonel Newcombe will deal with, and will do so with full justice to his theme. For though his first year of office has not yet run, he has envisaged the potentialities of the library as clearly as any man could.

II. By LUXMOORE NEWCOMBE, T.D., F.L.A.

(Librarian, The Central Library for Students).

As Mr. Twentyman has dealt with the general points arising out of the Report of the Public Libraries Committee, I will limit my remarks to those matters that deal with the connexion between the special library and the Central Library for Students. Perhaps it will be as well if these remarks are prefaced by a summary of the chief recommendations of the Committee as to the development of the Central Library.

Possibly the most important recommendations are that the Central Library for Students should be reconstituted as a special department of the British Museum, with separate functions, a separate constitution and an entirely separate stock, and that it should be placed on a national footing and be supported by a Government grant. Further recommendations are that the functions of the newly constituted Central Library should include that of a bureau of exchange for the special libraries mentioned in the "ASLIB Directory" and the compilation of a union catalogue of those special libraries. It is also suggested that it might become a central bureau of library information, and that it might

prepare select bibliographies to assist both librarians and readers in their choice of books.

Of these recommendations and suggestions three very directly concern the special libraries—the bureau of exchange, the bureau of information, and the union catalogue.

The bureau of exchange is merely an extension—on a national scale—of the existing Outlier Library scheme. The number of special libraries now co-operating with the Central Library is thirty.*†

There are, in addition, a few other libraries that lend their books through the Central Library. Of these the most important are the Science Library—with its wonderful collection of periodicals—and Dr. Williams' Library. In their Report the Public Libraries Committee recommend that the Science Library, which is already a national library, be given an additional grant to enable it to obtain, in time, all the scientific periodicals which are of substantial importance to the research student.

The Committee point out that apart from the various Government libraries "there is a multitude of special libraries, for instance, those belonging to research associations, established under the auspices of the Department of Scientific and Industrial Research, the libraries of professional societies interested in science, medicine, law, theology, architecture, and, indeed, every profession, which under certain circumstances might be brought into a general scheme of exchange for the benefit of the research student. The extent of these libraries will be disclosed by the Directory of the Association of Special Libraries and Information Bureaux. It may not be possible to bring the libraries of commercial and industrial firms into a scheme." They go on to say that they "consider that the solution of the problem of making the resources of these libraries . . . more accessible to the general public lies in the development of the Central Library as a bureau of exchange for all libraries. . . . It may be hoped that a very large number of libraries will make their stock available through the Central Library without payment, since their objects are to promote the dissemination of certain forms of knowledge, and they can fulfil this object more fully and more readily through the Central Library. . . . The universities, other than Oxford and Cambridge, which are in a special position, and university colleges will, it is hoped, also use the Central Library as a bureau

* Animal Diseases Research Association; British Drama League; British Institute of Adult Education; British Optical Association; College of Nursing; Co-operative Reference Library; Education Guild of Great Britain and Ireland; The French Hospital; Geographical Association; King's College for Women; League of Nations Union; Leplay House; Linnean Society; London and National Society for Women's Service; London School of Economics; Manchester Library for Deaf Education; Manchester Literary and Philosophical Society; Rothamstead Experimental Station, Harpenden; Rowett Research Institute; Royal Aeronautical Society; Royal Anthropological Institute; Royal College of Veterinary Surgeons; Royal Colonial Institute; Royal Institute of International Affairs; Royal Irish Academy; Royal Scottish Society of Arts; Scottish Marine Biological Association; Society of Antiquaries; Solon Ceramic Library; and the Theosophical Society.

† Since this paper was read, the number has been raised to thirty-one by the inclusion of the Society of Psychical Research.—Ed.

of exchange. It will be greatly to their interests to take this step, since they will probably obtain far more books from the Central Library than they lend to that library."

It is in the latter part of this statement that the solution to the success of the Central Library as a bureau of exchange will be found. Already, with the small number of libraries at present co-operating, many of the Outlier Libraries are appreciating the value of the Central Library as a source for the supply of otherwise unobtainable books, and some have even borrowed as many, or more, books than they have lent—not that figures mean anything, as the advantage of being able to obtain a book which is not in one's own library may often be more valuable than access to a dozen books in that library. If the Outlier Libraries are finding the exchange service of the Central Library useful now, how much more useful will they find it when the number of these co-operating libraries is increased tenfold? It is interesting to note that within the last few months four special libraries have come in as voluntary Outlier Libraries, without asking for any grant from the Carnegie Trustees, but being satisfied with the service the Central Library can give them. There is little doubt that many other special libraries will do the same.

Although one can feel optimistic about the future of the Central Library as a bureau of exchange so far as the non-commercial special libraries are concerned, it is not so clear how far the commercial libraries may be willing to co-operate. There are obvious difficulties in their way: but are these difficulties insurmountable? Members of the Conference who are associated with these commercial libraries may be able to give some information on this point.

We might now consider the Central Library as a bureau of library information. What information should such a bureau be able to give?

The success of the Inquiry Office established at Birmingham University by the Joint Standing Committee on Library Co-operation has demonstrated the value of an organization to trace the whereabouts of scarce books and periodicals. The Joint Standing Committee propose to transfer the work of this office to the Central Library, directly the latter is in the financial position to start a properly organized and equipped Information Department.

Valuable as is the work of tracing books, a fully organized Information Department should be capable of rendering other useful services. It should be prepared to supply bibliographical information of all descriptions: not information about such matters as the printing of early books, but practical information on such points as the publisher and price of any book which the librarian's bookseller might be unable to trace, and details of the most suitable book on any subject. It would not be the business of the Information Department to supply the detailed information on any subject, but only to give assistance in finding where the information may be obtained.

It is possible that this Information Department might be able to relieve the staff of ASLIB of a certain amount of the work they now have to do, as bibliographical inquiries could be passed on

to the Department, which would have both the trained staff and the reference material to deal with them. The ASLIB staff would thus be free to deal more expeditiously with the other business of the Association. The Joint Standing Committee on Library Co-operation have undertaken to make a grant of £50 a year, at any rate for three years, towards the cost of the Department. If other bodies were able to give financial assistance in this way it should soon be possible to establish a really efficient department for the supply of bibliographical information.

Closely connected with the bureau of exchange and the information department is the provision of a union catalogue of all the libraries associated with the Central Library, because on such a catalogue will depend the success in tracing with speed and economy any book required.

A small start has already been made in the collection of material to form the nucleus of a union catalogue. In addition to duplicate cards from the Scottish and the Irish Central Libraries, copies of the author cards of the accessions from January 1, 1927, are being supplied by twenty-one of the Outlier Libraries. The assistance given by these libraries is making it possible to begin, in a very small way, a piece of work which should grow into one of the most valuable bibliographical tools in the country. It is hoped that many other libraries may be able to assist in this great work as soon as the Central Library is in a position to deal with the material supplied.

But valuable as is this voluntary assistance, a union catalogue will never be built up without a special staff to assist in the compilation and in the "editing" of the cards as they are received. The latter work is essential and requires a considerable amount of knowledge and experience. Given even a small trained staff a union catalogue of quite useful proportions might be built up in a comparatively short time. After all, such a catalogue is merely a finding list, and it is not necessary that the cards should contain any bibliographical details. All that is necessary is (1) author's full name, (2) short title, (3) number of edition if not the first, (4) date. It is estimated that each cataloguer could abbreviate and copy 100,000 entries in a year, so that quite a small staff of cataloguers, with an editor at head-quarters to deal with the cards as they came in, could soon build up a very serviceable catalogue. It is probable that it would be best to start on the periodicals, anyway those not included in the "World List of Scientific Periodicals." These entries would take considerably longer to make.

Other branches of the work of a fully developed Central Library may be of service to special libraries, but the three dealt with in this paper are likely to be the most useful. These branches can only be successful if the governing body of every library in the country will co-operate in any way they can.

Mr. PERCY COHEN said that he thought they all agreed that the recommendations of the Public Libraries Committee on the subject of a National Library Service should be carried into effect. Special libraries would undoubtedly have abundant scope for assisting in the development

of such a service. He drew attention to the position of the libraries of Government Departments. These mines of information on the whole were only available for official purposes, and were beyond the reach of the public. Libraries of Government Departments might well be brought into the National Library Service so that their rich resources of special information should be at the direct disposal of the community.

Mr. STEPHEN GASELEE, C.B.E., desired to comment on Mr. Cohen's allusion to co-operation by the libraries of Government Departments. He considered that the idea of these as a closed corporation, inaccessible to the general public, was not founded on fact: the libraries, for instance, of the India and Colonial Offices had reading-rooms and allowed students to work there, while the library of the Patent Office was among the most important public reference libraries in the Kingdom. There were some, like his own (the library of the Foreign Office), where physical lack of space and shortage of staff made it impossible to welcome all and sundry, but recommended students were admitted in small numbers, and the great collection of foreign laws and treaties was constantly being consulted not only by other Government Departments but by legal and commercial firms. If a library could not cater regularly for students, it could do some good to the learned world by making its specialized contents public: the Foreign Office had recently done this by a very elaborate printed catalogue, combining author entries with an analytical subject-index in a single alphabet. Further, the collection of foreign treaties was put to a use of some value to the world: the Foreign Office produced an annual volume, "British and Foreign State Papers," giving the text of all international treaty engagements concluded between all countries. He thus thought that Government Departments were doing their limited best to help: the memoranda which they founded on confidential information could not be immediately made available to the student, but would become so later on, when the archives were thrown open after a specified term of years.

Dr. S. C. BRADFORD said in a subsequent communication that, although Mr. Cohen's criticism was surely intended as a helpful suggestion for a possible increase of the usefulness of the libraries of Government Departments, Mr. Cohen was probably unaware of the difficulties to be overcome. Such libraries were intended primarily for the use of the Government Departments to which they belonged, their librarians were fully occupied with the work of those Departments, and in many cases little or no accommodation for readers was available. Government librarians endeavoured to render all assistance to the public that was possible. On the other hand the Government maintained at considerable expense a number of large State libraries designed for the free use of the public, such as those of the British Museum, the Victoria and Albert Museum, the Patent Office, and the Science Museum, the latter of which had an information service which was available without charge.

The following also participated in the discussion:—Dr. H. H. B. Meyer, E.M., who spoke on the Union Catalogue of the Library of Congress and the growing use of the Library as a clearing-house; Mr. B. M. Headicar; Mr. J. H. Costain, M.A.; and Mr. Edward A. Martin.

The following Resolution was proposed by Dr. R. S. Hutton, seconded by Mr. Percy Cohen, and carried unanimously:—

> *Resolved:* That a Central Library on the lines proposed by the Public Libraries Committee would be of great service to the special and technical libraries of the country, and that, should such a Central Library be founded, the Association of Special Libraries and Information Bureaux would be prepared to co-operate in any way possible.

GENERAL SESSION.

Saturday Morning, September 24th, 1927.

THE ASLIB DIRECTORY OF SOURCES OF SPECIALIZED INFORMATION: ITS SCOPE AND USE.

By P. K. TURNER, A.M.I.E.E., M.I.R.E.
(Graham Amplion, Ltd.).

The Directory has been referred to on several occasions as the most important work of the Association. Although as Chairman of the Editorial Board I suppose it is my duty to further this idea to the utmost, I yet cannot subscribe wholeheartedly to it: for to my mind the propagation of the general idea of co-operation so admirably fostered by the Association's activities is really our major duty. Still, the Directory is, or rather will be, a prominent and concrete instance of this general idea, and I must therefore inflict on you some facts about it. Originally it was intended that the Directory should deal only with scientific and technical information, but after much consideration it was decided to extend its scope to cover, as far as we could, the humanities also. This, of course, enormously increased the magnitude of the task, and is partly responsible for the fact that the original date of publication saw the work still in manuscript and not in print. Another contributing cause of this misfortune is the much regretted illness, not only of our Editor, Mr. Barwick, but also of the Assistant Editor, Miss Durrad.

The present position of the work is roughly as follows. It consists, as you know, of four parts :—

1. Introductory matter.
2. Subject entries.
3. Location entries.
4. Index of named collections.

Taking these in order :—

1. We are greatly indebted, for valuable introductions, to two gentlemen eminent in the fields respectively of literature and science: Sir Frederic Kenyon, G.B.E., K.C.B., D.Litt., Director and Principal Librarian of the British Museum; and Sir Ernest Rutherford, O.M., D.Sc., President of the Royal Society and Cavendish Professor of Experimental Physics at this University. These introductions and the Editor's preface offer, of course, no problems from the editorial point of view.

2. The subject entries form the real meat of the work, and it is by the quality of these that the Directory must stand or fall. Frankly, I do not hope that in this, the first edition, they will be beyond criticism, although the greatest care has been taken, not only in compiling the entries, but also in expert checking and

revision. This latter process is now going on; we expect it to be completed by the end of the year, in which case the work will be in the hands of members early in the New Year. But no revision or checking, whosoever does it, can be so effective in discovering omissions and redundancies as daily use of the work by those into whose hands it will come: it rests with you, who will use the Directory, to notify us of its failings from your own point of view, in order that in the next edition we may correct any failings you find in this one.

The variety of subjects is extraordinary, and their mutual incongruity sometimes amusing. I quote just a few at random:—

Family Endowment.
Fireworks.
Menus.
Conjuring.
Tobacco.
Windmills.
Valentines.
Architectural Acoustics.
Biscuit Factories.

3. The need for location entries arises because in the interest of conciseness it has been decided to place under subject entries only the bare name and town relating to the source of information; full details of all these sources are collected in a separate list, thus saving repetition of the same details.

Parts two and three are already in type, and only await final revision.

4. Lastly, we have included an index to bequests, named collections, &c., which will afford a short cut for those who are already familiar with their nature. The manuscript of this has not yet gone to the printers; but the task in this case is not a severe one.

You will already have received a specimen title page and some sample entries. Please understand clearly that these samples were taken from the few proofs available at the time, and do not represent the final form of these entries.

In conclusion, I am sure I am voicing your sentiments in expressing, on behalf of the Editorial Board and the Association as a whole, our hearty thanks to the staff and to the many expert collaborators and revisers up and down the country: as usual, our gratitude implies the hope and expectation that it will stimulate them to yet further efforts.

CO-OPERATION BETWEEN LIBRARIES, GOVERNMENT DEPARTMENTS, POLITICAL SOCIETIES, AND OTHER SPECIAL INSTITUTIONS.

By B. M. HEADICAR, F.L.A.
(Librarian, London School of Economics and Political Science).

Co-operation is in the air. It has been in the air for a long time. Let us see if it is not possible to bring it nearer the ground and out of the discussion on this paper set in motion various ideas calculated to make co-operation an actuality. It will be agreed that the specialist library must exist side by side with the general library, each being complementary to the other. It is assumed that the functions of the general library, including the municipal library, are to encourage reading and to be an agent for bringing the specialist into contact with those very particular sources of information in narrow fields usually not catered for by the general library. Ordinarily the special library does not set out to collect and keep a large stock of books and other publications on file permanently, but endeavours to confine itself to such literature as is valuable for its particular needs and work. Because of this it can, if it will, prove of service to the municipal library by handing over to the latter as a gift or on deposit such of the contents of its shelves, no longer in general demand, but which are worth preserving somewhere where congestion does not present such a difficulty as in the special library. Files of periodicals would undoubtedly be of value in the general library, where they would be available to all comers at all times. Here, then, is my first practical suggestion. Let special libraries as far as possible find a home for their overflow stock in the nearest municipal library.

My second suggestion is that the special library should, whenever practicable, loan books from its stock to the municipal library when such should be inquired for. There is no question that this practice could be very considerably developed if the will existed. Students of any particular topic using the general library could be largely helped by advice as to important literature existing on the subject in question, and, in particular, I would emphasize the value to librarians of information regarding any important book published coming within the purview of the specialist. A regular list of such books published in, say, the "Library Association Record," with annotations where necessary, would, I am sure, be of immense value to the less specialist members of the library profession. It is obvious that the municipal librarian has neither the knowledge nor the time to enable him to evaluate particular books in the same way as the specialist in his subject can do.

The above suggestions are applicable to specialist libraries of all kinds. As to the directions in which the libraries more particularly considered in this paper may help, the following

ideas are specially in my mind. Political libraries must have very special information and sources regarding political and social movements of all kinds, politicians and statesmen, parties and programmes. I assume that many bibliographies of value are prepared by their librarians from time to time. Most of these I imagine never get into circulation in any form. Here again great service to the municipal and other libraries would be done if copies of such bibliographies could be printed in some librarianship organ for the benefit of the community, or a copy could be filed in the local public library. In the matters I have just enumerated it is clear that the political library must have almost complete collections of material such as the general library could never contemplate having. The political libraries must of necessity have the fullest details of party programmes and, no less important, of criticisms of such. Every effort should be made to see that copies of all journals issued by the parties concerned are available at all public libraries. Gift copies are excellent propaganda, and if free copies are not available, much mutual good may be done by personal notification of any such publications deemed important. Labour associations naturally must accumulate a mass of detailed information relating to wages, unemployment, industrial disputes, and social problems, not so much that contained in books but in records and memoranda compiled not necessarily for publication. Once again it is the knowledge of the existence of such material on the special topics concerned which the public and the student would find so helpful, and I emphasize here the desirability of further efforts being made by the librarians concerned in this direction. The results would benefit not only the public but the association and the librarian also. A satisfied inquirer is the library's best friend. Government departments have important libraries of which the ordinary individual has but little knowledge. I venture to suggest that publicity regarding the nature and scope of these libraries would be a most valuable means of co-operation. How many of us know who may use these departmental libraries, when they are open, what their specialities are? Naturally we shall expect to know a great deal more from the "ASLIB Directory." I am not referring to one announcement only, but a constant keeping up to date in the public mind of the facilities available in the libraries concerned.

It will be seen that the co-operation in question consists mainly in using the public general library as a storehouse of unique bibliographical information and as a depository for the books and periodicals which there is no longer room for in the special library, but which are worth preserving.

It may be asked, what does the special library get in return? It not only has the full use of the much larger stock of books which the public library usually possesses, but it can undoubtedly rely upon the active assistance of a trained librarian and staff, not only for help in research, but, in particular, for assistance in matters of library technique—cataloguing, classification, binding, and the hundreds of other details of librarianship which only the specialist in that subject really knows. Such help

will gradually lead to greater uniformity of method, simplicity in operation, economy in labour, and greater efficiency in libraries of all kinds. Duplication of bibliographical effort and book purchase would be largely diminished, and each institution would mutually benefit.

It is my great hope that the discussion which is to take place will not result in mere abstract agreement concerning my suggestions, but also a determination in all concerned to put into practice as soon as possible any or all of the ideas promulgated.

Mr. PERCY COHEN opened the discussion. The more he thought of it, he said, the more he was convinced that the solution of most of their difficulties was to be found in the development of the National Library Service, and he hoped that ASLIB as a corporate body would do its utmost to bring such a Service into being. Mr. Headicar's suggestion that special libraries should, as far as possible, find a home for their overflow stock in the nearest municipal library was given some support by a reference in the Report of the Public Libraries Committee. It was a means by which the specialist could help the ordinary public. But they must not lose sight of the main purpose of ASLIB, which was for specialist and information services to help each other by the better utilization of material and resources and the co-ordination of analogous information services. By this means ASLIB would assume the status of a clearing-house for information.

Reverting to the subject of the libraries of Government Departments which was discussed the previous evening, Mr. Cohen commented on the speech which had been made by Mr. Stephen Gaselee, the accomplished Librarian of the Foreign Office. Ample justification for the criticism which he (Mr. Cohen) made was to be found in the Report of the Public Libraries Committee, which, after referring to certain Departments, proceeded:—

> "In most other cases the books in the libraries of Government Departments are reserved for the use of the Department, and the general public has no access for the purposes either of reading or of borrowing."

He always considered it a great pity that the library of the Board of Education, which ought to be a model and pattern to all other libraries, should be housed in the peculiar way in which it was.

He fully agreed with Mr. Headicar as to the value of bibliographies on special subjects, and took the opportunity of congratulating him on the bibliographies which were printed in the Bulletin published by the London School of Economics. It might be a useful service were the bibliographies of Special Libraries sent to ASLIB for circulation to its associated bodies. Last year he had suggested that ASLIB might undertake the duty of drawing attention to important new books or pamphlets mentioned in the Bibliographical Bulletin on International Affairs of the Institute of Intellectual Co-operation. This led him to another suggestion, viz., that ASLIB should have some sort of periodical, if only a quarterly octavo sheet. The affiliated bodies, he was sure, would be only too glad to pay for its production. It would then be easier to indicate ways in which methods could be co-ordinated, facts disseminated, and resources pooled wherever possible and practicable.

The suggestion that political institutions should send their literature, *i.e.* journals, pamphlets, and leaflets, to municipal libraries, opened up a vista of terrifying possibilities. Suppose the library assistant were asked to explain the meaning of the new "Surtax," or what Mr. Baldwin really promised Agriculture, or what the I.L.P. meant by "Socialism in our Time"! It was a disturbing prospect, and would place an exceptional trust in the austere impartiality of the average public librarian. It was a suggestion more calculated to wreck the municipal library than to help it.

They had to engage in an intensive propaganda campaign for ASLIB. The publicity given in the Report of the Public Libraries Committee was all very well in its way, but the existence of ASLIB was essential to the needs of the community. ASLIB was a sort of intellectual menagerie, and consideration of common problems and improved methods, together with

periodical discussions on library and research development, would fulfil the aims which had been outlined when the first Conference met at Hoddesdon.

Mr. H. PARKINSON suggested that municipal and other librarians might find it advantageous to co-operate, as far as possible, with the newspaper world in respect of books and periodicals sent out for review purposes or regularly exchanged between the newspapers concerned. Such works might, after review or notice, be permanently acquired by librarians under extremely favourable conditions, as the speaker's own experience tended to show. With regard to the suggestion that special libraries should be prepared to lend volumes to municipal institutions in certain circumstances, he emphasized the indispensability of some form of guarantee against the non-return of such volumes.

Mr. F. S. SMITH, M.L.A., stated with regard to Mr. Headicar's suggestion of dispensing material, pamphlets, periodicals, &c., to municipal libraries, that in his view municipal libraries had already so much literature in storage and the space available was usually so small that few could undertake to store additional material. In the matter of periodicals, much duplication was going on, and numbers of institutions were storing files of little-used periodicals. Could not a Directory of Filed Periodicals be compiled, giving the location of sets of periodicals?

Mr. E. A. MARTIN, F.G.S., agreed that the general public was now making greater use than ever of municipal libraries. People who a few years ago despised their local libraries now made use of them. They did not, however, always know the contents of such libraries, for many specialist and expensive books were now to be found on local shelves, and these should be searched before resort was made to the Central Library for Students. As regards bibliographies, many of these were issued in connexion with the hundreds of Library Talks which were delivered every year in the Croydon Borough, and copies of these were always available to applicants. The speaker referred to the classified lists of scientific books issued monthly in "Nature" which would serve bibliographical purposes.

The following spoke in the discussion:—Rt. Hon. Sir Horace Plunkett, K.C.V.O., F.R.S., D.C.L., LL.D., who referred to the work of the Association as being essentially team work; Mr. H. Rottenburg, M.A., M.I.E.E.; Mr. H. O. Frind, F.R.G.S.; Mr. J. H. Costain, M.A.; Colonel L. Newcombe, T.D., F.L.A.; Dr. J. C. Withers; Sir Richard Gregory, D.Sc., F.Inst.P., F.R.A.S.; Dr. J. E. de Vos van Steenwijk; Mr. F. Henn; Dr. E. E. Lowe, B.Sc., F.L.A.; Mr. W. L. Hill, A.I.P.A.; and Mr. H. A. Sharp, F.L.A.

INFORMAL DISCUSSIONS.

Saturday Morning, September 24th, 1927.

PRINTING, REPRINTING, AND ABSTRACTING SCIENTIFIC LITERATURE: POSSIBLE ECONOMIES.

Mr. H. L. Robinson (Textile Institute) spoke on the above subject.

A keen discussion followed, which was continued at an adjourned session held that same evening.

The following members participated:—Mr. J. G. Pearce, B.Sc., M.I.E.E.; Mr. J. F. Pownall; Mr. John H. Costain, M.A.; Mr. P. K. Turner, A.M.I.E.E., M.I.R.E.; Dr. R. S. Hutton; Sir Richard Gregory, D.Sc., F.Inst.P., F.R.A.S.; Mr. G. Shaw Scott, M.Sc.; Mr. A. Zaiman, B.A., F.S.S.; Dr. J. C. Withers; Mr. E. I. Robson, M.A.; Dr. C. R. Young, O.B.E.

The following Resolution was proposed by Dr. C. R. Young, seconded by Dr. J. C. Withers, and carried unanimously:—

> *Resolved:* That the Council be asked to set up a Committee to examine the purpose and scope of Abstracts of scientific and technical literature and the present mechanism of preparing and issuing such Abstracts and the cost thereof: this Committee to make a survey for discussion at the next Conference.

Suggested names of persons and organizations that should be represented on such a Committee were put forward for the consideration of the Council.

A further Resolution was also passed in the following terms:—

> *Resolved:* That the Association be asked to consider the investigation of the position regarding the printing by Scientific Societies of their own publications, with a view to a report being drawn up regarding new printing machines, &c., that were available.

The Chairman was asked to bring these Resolutions before the final session of the Conference.

The Reference Libraries of London and the practicability of a Union Catalogue formed the subject of the next discussion, when Mr. F. S. Smith spoke as follows:—

THE REFERENCE LIBRARIES OF LONDON: IS A UNION CATALOGUE A PRACTICABLE PROPOSITION?

By F. Seymour Smith, M.L.A.

(Chief Assistant at the Bethnal Green Public Libraries and Hon. Editor, "The Library Assistant").

In my capacity of Editor of the "Library Assistant" I have the opportunity of looking through the majority of the Annual Reports issued by the various Library Authorities of the United Kingdom. The contrast between the co-ordinated book service offered in London and (say) Manchester revealed by a study of these reports is amazing, and not a little humiliating to the Londoner. If I am at an extreme end of Manchester and wish to refer to the complete works of Thomas Hobbes, I need only go to the nearest branch library, state my requirements, and I shall be informed of their location if they are possessed by any of the Manchester libraries. If, on the other hand, I live in Bethnal Green or any other London borough not possessing the volumes, and wish to refer to them, very little help can be given me. On

inquiring, I should be told that there was only one complete edition (the Bohn edition in 21 volumes), and that this was now out of print. Although it is very probable that many of the older reference libraries in London possess a set, nobody, except by knowledge accidentally gained, could be sure where one would be found. If I were leisured I should use the British Museum, but if I were able to devote only my evenings to study (the position of thousands of students) I should be at a loss what to do. I might consult as many printed catalogues as I could lay my hands on, or apply to the Central Library, or, as a last resort, make an excursion to Manchester.

This, put briefly, shows I think the need for a Union Catalogue of London's libraries. Every student and librarian can supply numerous examples approximating to the imaginary example I have given. I heard the other day of a student living eastwards who wanted access to Burnet's "History of My Own Times." She consulted her local library, where, shamefully enough it must be admitted, this book was not in stock. The student was under age and was preparing for an examination, both these facts disqualifying her for a reader's ticket for the British Museum. She was told to go to the Guildhall, and for weeks she did so, at some expense, great loss of time, and not a little inconvenience. Then by chance she heard that a library quite near her home, though not actually in her district, possessed the very book she wanted. As the reference departments of our libraries are open to any visitor she was able to refer to these and other books without any formality. This example happens to concern a book which should be in every library, but there are thousands of books which for one reason or another are not stocked as a matter of course.

The two great reference libraries of London, the Guildhall and the British Museum, are overcrowded simply because inquirers for works not stocked by the various London libraries are always sent there. If librarians could direct readers to public reference libraries with any certainty that their wants would be satisfied they would naturally do so. In this way the public would obtain the full use of their libraries, much personal inconvenience would be saved, and the British Museum Reading Room would be relieved of many casual visitors.

I think everybody will agree that it should at least be possible for any reader to ascertain the public library location of any important and not generally purchased volume. There must be thousands of valuable books lying idle in London, because the people who want them do not know where to find them. The problem is of importance to business men, too, for quite recently an employee of a large furriery firm inquired at his local library for Poland's great work on fur-bearing animals. The librarian to whom he spoke would have been only too glad to have purchased a copy for him, but the book has been long out of print and is now almost unobtainable. I maintain that the librarian should have been in a position to tell his inquirer that he could see a copy of the book at such-and-such a library. As it was, the only place to which to send him was the British Museum or the Guildhall.

Yet I am pretty sure that the book is in the stock of some of the older libraries.

The need for a Union Catalogue granted, the question then arises whether one could be formed and maintained. After a good deal of consideration I personally think most emphatically that it could. The value of opening this discussion at this Conference (for the opportunity of which I am very grateful) lies, I think, in the fact that ASLIB's main purpose is the sifting of problems of co-ordination for the benefit of the student, the business man, and literature generally. Already something has been done to convey to students the whereabouts of the special collections of literature which are scattered over the country and which are sometimes quite unknown to the people who could make the best use of them. In fact, the value of the "ASLIB Directory of Sources of Specialized Information" can hardly be exaggerated. The good work thus begun by ASLIB must, if possible, be continued and extended, and I suggest that there is no better field for future activity than the reference collections in the London libraries. The Union Catalogue which is being formed at the C.L.S. is a step in this direction. So, too, is Col. Newcombe's recent volume on the "University and College Libraries." I am glad to learn that Col. Newcombe is also of emphatic opinion that this Union Catalogue is practicable. From the last report of the C.L.S. I find that twenty-one private or special libraries subscribe to the Union Catalogue and that it has proved of great value to inquirers. The method and organization responsible for the efficient working of this catalogue would furnish, of course, a technical basis for the formation of the larger catalogue under discussion now.

The ideal arrangement would be to include in the Union Catalogue the entire non-fiction stock of every library in the Metropolitan Police Area. But lest we should lose ourselves in a forest of figures and imagined examples, I think it advisable to limit our discussion to the Reference Libraries of the Metropolitan boroughs, the stock of which is about 350,000 volumes.

Selection for the Union Catalogue would obviously be very difficult, and at the best haphazard. The British Museum authorities preserve anything and everything, and I expect that this would prove to be the best policy to adopt for union cataloguing. Should the majority differ, I suggest that a useful limitation would be to catalogue everything published before 1870, and everything published after which cost more than a pound or is in any way valuable or difficult to obtain.

Having decided what we are going to catalogue, the next problem is how are we going to organize the work of compilation?

A Committee would have to be formed, chaired perhaps by a representative of the Central Library, on which would be represented every interested authority. The cataloguing experts will easily be able to determine the technical details, such as the form of entry and the type of catalogue. The question of the card or printed catalogue raises the question of cost. Personally I have always disliked the present worship of the card catalogue, but the cost of a printed catalogue would probably be prohibitive in this

instance. The invaluable catalogue of the London Library cost (before the War) £4,250 for an edition of 3,000 copies, about 220,000 books being catalogued. The cost of a printed catalogue for a stock of 350,000 volumes in these days would probably exceed £6,000. If the cost be not prohibitive it would, in my opinion, be much better to have a printed catalogue of the main stock, and a card catalogue of the additions. With a copy of the printed catalogue in every reference library the task of ascertaining the whereabouts of a required volume would be simple and expeditious. It is to be hoped that a decision, when made, will be reached only after a full consideration of the benefits to be derived from a printed catalogue, in spite of its comparatively high cost. Apart from the difference in pre-war and present printing charges, it must be remembered that the entries for the London Library Catalogue are very full; it must have been a work of considerable typographical difficulty from the compositor's point of view. The entries for the Union Catalogue, on the other hand, need be, I should say, merely of the kind known to cataloguers as "short author." It is possible that my suggested figure of £6,000 is an over-estimate.

The great objection to the card catalogue is, of course, its excessive bulk. It may be found that one such catalogue housed at the Central Library would be sufficient. If the Departmental Report on Public Libraries is acted upon, and the Central Library obtains its grant, extended premises and staff, the difficulties of storage can perhaps be overcome.

Some may object that short author entries will be inadequate; it must, however, be remembered that the question the catalogue will be called upon to answer will be simply :—"Where can I have access to such-and-such a book?" and this question would adequately be answered by such an author catalogue. Information, for example, on the best book for a special subject, or on the range of books in a series of subjects, will have to be sought elsewhere. Any reference librarian can and does supply such information. When the book required is found not to be available at the place of inquiry, then the Union Catalogue would come into use. The actual location of the book would, of course, have to be codified. The best code will probably be numerical, from 1 to 28, with letters for branch libraries. Thus, if Islington were numbered 8, the Central Library at Islington would be 8, the North Branch 8a, the West 8b, and the South 8c.

There are various ways in which the extra work thrown on the staff of the reference library could be reduced to a negligible minimum. Information is not always wanted immediately, and telephonic communication (which is a nuisance) could be reduced by the use of a printed post card. Blank spaces would be left for the inquirer's name and address, the particulars relating to the book wanted, and the code numbers of the libraries possessing copies. The key to the code could be printed on cards hung in every library and given to interested persons for reference. The post cards could be filled in by the inquirer himself, and addressed by him, either to his private address or to the library. The card would then have to be slipped into an envelope with the address of

the Central Library already printed on it. On the return of the card, reference to the code would supply the reader with the information he required. By this method the reference staff would have to assist only those readers who were stupid or who were unfamiliar with the system; the Central Library staff would merely have to fill in the code numbers, since all other clerical work, such as addressing the card, &c., would already have been done by the inquirer.

In concluding these notes, I should like to express the hope that the L.C.C. might be willing to contribute towards the initial cost of the scheme. Mr. Pacy's reservation in the Departmental Report is a spirited expression of a common-sense point of view. There is surely no reason why library authorities should not endeavour to obtain some of the advantages of central control by other means than those they so much dislike. A grant from the L.C.C. and a proportionate sum from each of the London boroughs would place the Union Catalogue on a firm basis. Its upkeep would be inexpensive and simple. Each library would have to mark its monthly additions in some list of current literature, such as that of the British Museum or the monthly list in the "Publishers' Circular." The entries on these printed slips could be cut out and mounted, the code numbers attached, and then dispatched to head-quarters, together with a list of entries for other purchases for which no printed slips were available.

While the catalogue is being formed, I imagine that the majority of the libraries concerned will be able to do their own cataloguing. The larger collections might present difficulties, however, but I think the various professional associations could and would organize voluntary assistance. There must be many student librarians at University College and elsewhere who would welcome the opportunity of gaining practical experience of cataloguing. The Association for which I am a delegate (the Association of Assistant Librarians) I must commit to nothing, but I can sincerely vouch for their readiness to assist to the best of their ability any project which will benefit their profession and increase the service which our libraries offer to the public.

If we could form and maintain such a catalogue as I have outlined, the gain, I submit, would be incalculable. The student, the general reader, the research worker and business man, instead of being restricted to the use of a few thousand volumes, would have automatically placed at their disposal a vast collection of valuable reference books. Minor economies would inevitably result. The Librarian of Hackney, for instance, would not recommend the purchase of Levinson's "Life of Bakst" were he able to ascertain that a copy of that beautiful book is in the Reference Library of Bethnal Green. A Hackney reader wishing to refer to the book would have to spend a penny bus fare, but his librarian would have saved seven or eight guineas, which he could profitably spend perhaps on buying the new collected edition of Landor.

Shall we ever really reach this enviable position? To say that we shall seems too good to be true. But I repeat, the Union Catalogue is emphatically not a Utopian dream; it is a real neces-

sity which could easily be brought into being. Surely London can manage to render this important service to its citizens.

The following participated in the discussion that followed:—Mr. B. M. Headicar, F.L.A.; Mr. H. Rottenburg, M.A., M.I.E.E.; Lt.-Colonel L. Newcombe, T.D., F.L.A.; Miss P. Strachey; and Mr. A. R. Barnes.

The following Resolution was proposed by Mr. B. M. Headicar, F.L.A., seconded by Mr. H. A. Sharp, F.L.A., and carried unanimously:—

> That this meeting considers it desirable that a Union Catalogue of all the books in the Municipal Reference Libraries of London be compiled, and suggests that a panel of voluntary cataloguers be enrolled through the Library Association and the London University School of Librarianship, and, further, that the Library Association be approached by ASLIB with a view to immediate steps being taken to obtain the assent of the librarians of London to the carrying out of this work.

The Chairman was asked to bring this Resolution before the final general session of the Conference.

The meeting recommended that the Council should consider printing the paper prepared by Mr. F. S. Smith, M.L.A., as opener of this discussion, in the Report of the Conference.

LIBRARY LIAISON WITHIN THE EMPIRE.

Mr. H. O. FRIND, F.R.G.S., spoke at an informal discussion on the above subject; Miss A. L. Lawrence, M.B.E., M.A., LL.B., acted as Chairman.

In the discussion, Mr. Percy Cohen supported Mr. Frind's submissions. He drew attention to the problem to be envisaged by the Civil Research Committee, which was analogous in composition to that of the Committee of Imperial Defence. The Civil Research Committee had to take into consideration the machinery for the development of the Empire on scientific lines. ASLIB might be able to render a useful contribution. There was every need for uniformity of Library policy in Great Britain and the Dominions.

The following also participated:—Mr. Evans Lewin, M.B.E., F.L.A.; Mr. A. S. Fitzpatrick, M.Sc., D.I.C.; and Mrs. R. J. Adam.

The following Resolutions were passed for submission to the final general session of the Conference:—

Resolved:

1. That the Fourth Conference of the Association of Special Libraries and Information Bureaux assembled at Trinity College, Cambridge, be asked to express its opinion that closer liaison between the libraries and more particularly the special libraries of the Empire is greatly to be desired.

2. That the Conference request the Council of ASLIB to consider the desirability of calling a special Conference, or of arranging for a special section at the Annual Conference, to discuss the problem of closer co-operation between the libraries of the Empire and to explore the possibility of obtaining the co-operation of other bodies.

The second Annual General Meeting was held on Saturday, September 24, 1927, in the Hall of Trinity College, Cambridge. A full report is given on page 168.

INFORMAL DISCUSSIONS.

Saturday Evening, September 24th, 1927.

EDUCATION.

Informal discussions on this topic were held under the chairmanship of Mr. J. W. H. Brown (National Union of Teachers).

Dr. H. H. B. Meyer, E.M. (American Library Association), gave an account of

SCHOOL LIBRARIES IN U.S.A.,

after which an address was given by Mr. F. A. Hoare (National Union of Teachers) on "Libraries and the Teaching Service" as follows :

LIBRARIES AND THE TEACHING SERVICE.

By F. A. Hoare (National Union of Teachers).

It is not the purpose of this paper to advocate the provision of special libraries for teachers as a special class of the community. The needs of teachers in relation both to their work and to their own reading are so diversified and complex that a solution of the problem of adequate provision can only be reached by a more effective scheme for rendering available the facilities that already exist. The function of the teacher is to act as the technical adviser of the student, and this he must be prepared to do in relation to any and every subject of study both within and without the curriculum. Clearly it is neither possible nor desirable that he should profess a knowledge of the content of these various subjects, but he must certainly be in a position to give advice and direction to the earnest student who desires to specialize. Nothing has brought this home to the teacher more forcibly than the reformation in teaching method of the past few years.

The characteristic note of recent educational doctrine and practice has been the insistence on the importance of the individual as distinct from the class. More and more the tendency is that teachers shall *teach* less and pupils shall *learn* more. Self-education is now the keynote of the older children's curriculum in our elementary schools, and there is even the possibility that in institutions of higher learning, such as the universities, there may be a realization that the pumping in of information by means of the time-honoured lecture and its extraction later by means of the examination system is, in fact, the negation of education, and kills all desire to learn. The newer methods involve the problem of the provision of suitable books. Reference books, standard books on literary and scientific subjects, and so forth, are more than ever essential to the teacher who is to control the work of

senior classes; and the increasing tendency to specialize makes the knowledge of sources of information more than ever essential to success. It is, too, becoming generally recognized that, in choosing books for this purpose, those designed by their authors for use as school books are the very ones to avoid; this is especially true when the teacher desires to encourage a student in the pursuit of some particular individual bent.

Just as the modern teacher needs the help of libraries and information bureaux in his relationships with his pupils, so in an even greater degree in his own study is the problem of easy access to standard works a vital one. If his teaching is to be vivid and real his mind must constantly be refreshed by close study of the best modern works, embodying the results of the most recent researches. In no subjects are these considerations more vital than in History and Literature, where breadth of knowledge, real insight into the meanings of great movements, and the acquisition of a rich store of stirring detail will enable the teacher to develop that mental background which will clothe the dry bones of his teaching with flesh and blood and inspire his class with a sense of reality and life.

It is therefore with a real recognition of the important part which this Association has to play in the intellectual life of the teaching profession, together with a lively sense of favours to come, that I venture to put forward a few suggestions as to the means whereby a closer co-operation can be secured between these two educational institutions, the schools and the libraries, to their mutual advancement and to the common weal.

The report of the Public Libraries Committee has probably put a term to the traditional contention that library provision is part of the education service, and should therefore be administered in every area by the Local Education Authority. Teachers generally regret this decision, for they believe that arguments in favour of using the same areas for education and library purposes are overwhelming, and would be even stronger if there were a single authority for education in each area. It is often assumed that the Library Committee would then be a Sub-Committee of the Education Committee. This is not necessarily so. What, in our view, is indispensable is that the two Committees should report to the same Authority, which would have financial control over both and assist both services on the same general principles.

Since teachers are a special class, and are engaged in work the success of which may have a most valuable reaction upon the demand for books, it is wise for Library Authorities to afford them special treatment. In particular, the limitation on the number of books which are allowed to one reader at one time should be relaxed. Many Authorities already issue special borrowers' tickets which entitle the holder to remove six or more volumes at the same time, and this concession is much appreciated. Similarly the time limit for retention without penalty might be extended, and certain reference volumes not much in demand might be made available for home use in special instances. I have found that, by cultivating friendly relations with the librarian, rules of too great a rigidity may be conveniently sur-

mounted, but I wish to secure an official recognition of the special needs and requirements of teachers as a body.

Books illustrating the special subjects of the curriculum can be obtained easily, except perhaps in the smaller and less well equipped library areas, and even there it is possible to make use of the facilities afforded by the Central Library for Students. These facilities are not too well known among teachers. The professional organizations should do as much as possible to inform teachers of the opportunity the Central Library presents to them.

Teachers would welcome any step which would make Government publications of interest to them more generally available. One of these at least—"The Handbook of Suggestions"—you might expect to find on every teacher's private bookshelf. But there are a number of others, including the Annual Report of the Board, the Annual Volume of Statistics, together with the Reports and Evidence of the Consultative Committee, the Adult Education Committee, innumerable Royal Commissions and Departmental Committees, the Ministry of Labour, and the Advisory Committee for Juvenile Employment, which should be rendered accessible for occasional consultation, if not for intensive study, and which the average teacher could not be expected to buy. The teachers' own periodicals give a considerable amount of space to summarizing and commenting on these documents, and it is a pity that few teachers have an opportunity of perusing the originals. There is little doubt that they would be largely consulted if it were known that they were easily available. Every considerable library might have a Government publications annexe, and it should be easy to arrange, in spite of the protests that might be expected from booksellers, that orders on the Stationery Office might be conveyed through the Librarian.

A more urgent need is that the teacher should be able to keep in touch with the latest developments in the science which he practises, and that he should be able to obtain access to the results of inquiries conducted by private bodies, of research work conducted by individuals, recent psychological experiments, and interesting innovations in method and school organization all over the world. To provide information of this type, whether in book or periodical form, is not the function of a local library. But some device must be invented whereby a few specialist libraries may help to make this material available.

Unlike the worker in science the teacher has not a rich choice of learned societies which print Proceedings or issue Abstracts. His material is widely scattered, and there is little machinery to bring new issues expeditiously to his notice. So far as periodical literature is concerned, the "Subject Index of Periodicals" (Section F : Education and Child Welfare) issued by the Library Association is of considerable value, though it might be much more comprehensive. All public libraries should possess this Index, and we should see that teachers are informed of its existence and instructed in its use. The Index by itself does not help very much, unless the periodicals noticed in it are available for reference. Hence the need for a Central Library of Periodicals remains. The Board of Education is the obvious centre where such periodicals might be collected.

Similarly there are the innumerable books which may be classified under the general head "Education and Child Welfare," of which no adequate bibliography has been collected. These include a large number of official printed documents, now to be found perhaps only in the great statutory libraries, or in the archives of the Board of Education, of the College of Preceptors, or of the National Union of Teachers. The preparation of select lists and bibliographies is at least as urgent here as elsewhere, though possibly the Central Library, even in association with the British Museum under the scheme proposed by the Public Libraries Report, will not be able to undertake it. Such lists might be issued by the Board of Education, and compiled and kept up to date as part of the routine work in the Office of Special Inquiries and Reports, to which the Library of the Board is attached. Such an enterprise requires money, and it is eminently desirable that it should be subsidized from national funds. An alternative is that we should wait until America moves, and perhaps the International Institute of Teachers College at Columbia University provides the necessary list, as they are doing in their Year Book in the case of the educational organizations and systems all over the world, and their development from year to year.

The American work to which I have referred reminds us that the whole world is an educational laboratory, and that the work of translation was formerly an exercise for librarians. Formerly the Board of Education, with the able assistance of Sir Michael Sadler, undertook the work that is now relegated to the U.S.A. The "Special Reports on Educational Subjects," issued during his régime, are a model of what international inquiry should be. It is a thousand pities that they have been discontinued.

The Board of Education Library now contains 57,000 volumes, and would be even a more valuable mine of information than it now is if more money were devoted to its development. Last year it was visited by some 500 people, many of them foreign or Colonial visitors. Surely its treasures should be more readily available to the public which contributes to its maintenance. Much research work in the history of education is overdue, and would be powerfully assisted if some of the volumes containing the necessary material were circulating outside London. The University Libraries and those special libraries to which I have referred would probably be prepared to co-operate with the Central Library if definite plans were suggested.

The N.U.T. is functioning to a greater extent than ever before as a bureau of educational information, and is prepared to develop this side of its activities to any reasonable extent as the demand increases.

These suggestions for development are put forward solely with the idea of showing how ASLIB can help the teacher more effectively to perform his services to the public; it must be obvious that the work of this Association as a co-ordinating body and as an intelligence service can be of the greatest assistance in this respect.

INFORMAL DISCUSSIONS (*continued*).

The Necessity for uniformity in the Cataloguing of Periodicals was the subject of the next discussion, when Dr. W. Bonser spoke as follows :—

THE NECESSITY FOR UNIFORMITY IN THE CATALOGUING OF PERIODICALS.

By W. Bonser, B.A., Ph.D.

(Sub-Librarian, University College, London).

This subject has been in my mind for some time, but the necessity for its being discussed has been especially shown by the publication last year of the "World List of Scientific Periodicals" and of the fourth edition of the "Hand-list of Short Titles of Current Periodicals in the Science Library" at South Kensington, issued by the Board of Education. The "Report on Public Libraries," just published, intimates that the Government may be spending more money on the Science Library in future, so as to make it the most complete collection of scientific periodicals in the country, and the library has lately been made available for lending purposes "to approved institutions where scientific work is being carried on." Unfortunately, no instructions for use are issued with this hand-list, and since the system employed is complicated, it is difficult for the ordinary student to understand. The object of such a list is to make the book available to the reader as quickly as possible. If, however, a chemistry student in one of the privileged institutions mentioned wishes to know if the Science Library takes in, *e.g.*, "Chemical Abstracts," he will naturally look under the word "Chemical," but not finding the entry there, may conclude that the library does not take the journal. The librarian of his own college, if consulted, would probably look up under "American Chemical Society," since "Chemical Abstracts" is published by that Society. This journal is, however, listed under "Easton, Pa.," where it is published, but no cross-references are inserted. If the student then requires "Chemical News," taught by experience he will look it up under "London," the place of publication, but "Chemical News" is entered under the word "Chemical." If the "Report of the British Association" is next required, the student will try under "Report," "British," or "London" as the head-quarters of the Association, but is not likely to look under "Great Britain and Northern Ireland," where he would find it. This last entry is especially puzzling, since there are separate entries under "Great Britain," "Great Britain and Ireland," and "Great Britain and Northern Ireland" : nor is the

reason for this threefold division apparent to the ordinary reader. Trade journals in this hand-list are entered under the first word of the title of the periodical. Journals published by a learned Society are entered under the name of the town where the Society holds its meetings (or did when the Society originated), while Government publications are entered under the name of the country to which they belong.*

The "World List," on the other hand, enters all periodicals under their titles: it is therefore possible for the student to find the publication required at once without having to consider whether it is issued by a Society or a Government, or if it is a trade journal. He need learn no complicated cataloguing rules.

Periodical entries are in themselves often so complicated, and the methods employed by different libraries in their catalogues vary to such an extent, that some acknowledged uniform method of listing, both as to form and order of entry, is most desirable.

Some catalogues, such as that of University College, London (and that of the Royal Society, since it is by the same compiler, Col. Newcombe), are strictly alphabetical. Some, such as the "World List," are alphabetical only as regards the important words. In the latter case, the differences between, *e.g.*, "Bulletin de," "Bulletin des," "Bulletin du," "Bulletin of the," and "Bulletin" (with the preposition omitted), are ignored, and the first important word which follows the preposition is the one which determines the alphabetical order. In the former case (the strictly alphabetical) some of these entries would be separated, at any rate in catalogues of large collections, by many entries. The method introduced by the "World List" is, in my opinion, preferable. It is useful to have such entries as "Bulletin of the Arizona Agricultural Experimental Station" and "Bulletin, Arizona Board of Health"† consecutive, instead of in strictly alphabetical order, for few librarians would remember that "of the" was omitted in the one case and inserted in the other.

Another difficulty occurs when a periodical changes its title. Sometimes the entry is under the latest form, as is directed by the Cataloguing Rules compiled by the A.L.A. and L.A. and by the Rules of the Library of Congress, with cross-references from earlier titles. Sometimes, as at University College, London, the periodical is entered under the earliest form, with the later forms following it in the same entry, each introduced by the words "[*Continued as*]," and there are cross-references from these later forms to the main entry. Sometimes, as in the case of the "World List," all forms appear in their alphabetical order, often without the connexion being shown. Whichever method is used, the connexion must be shown in each case, each new form being introduced by the words "[*Continued as*]" or "[*Formerly*]."

But the greatest number of complications occur in the case of

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* See Mr. Wilks' review of this Hand-list in "L.A. Record" for June, 1927, page 135.

† In this case, obviously, a cross-reference from "Arizona Board of Health Bulletin" should also be inserted.

periodicals published by societies, governments, and other bodies. Some lists, such as that of the University of London, put the journal under the name of the institution, or of the town where it is situated; thus: "Aberdeen, University of, Review"; or "Academia das Sciencias (Lisbon), Boletim bibliografico." This has the merit of bringing all the publications of an institution together. Some, such as that of University College, though placing the journal under its own title, add an index of institutions at the end. The Bodleian list puts the name of the institution in round brackets after the title of the periodical. Further complications arise when two institutions amalgamate, or when an institution changes its name or adds "Royal" to it.

A joint catalogue of non-scientific periodicals in our University libraries is in preparation, and is designed to facilitate borrowing between the Universities. The editors of this work have been experiencing great difficulties, since the various catalogues concerned employ different methods. Here are a few of the difficulties encountered.

Some of the catalogues abbreviate their entries. The University of Cambridge, for instance, will begin an entry with the words "Abhandlungen d." This "d." may signify "der" or "des," but all "d." is placed together. The abbreviation "K." in German, Dutch, and Scandinavian names often leads to difficulties as to alphabetical order, since it can stand for different things: "K.K." still more so.* The Bodleian goes still further, leaving out the prepositions in the case of the Society's publications, thus:

"522. Bulletin (Acad. de Médecine). *Par.*
524. Bulletin (Acad. delphinale). *Grenoble.*
534. Bulletin (Amer. Museum of Nat. Hist.). *New York.*"

This group follows another group of Bulletins which are not issued by societies. Much time is wasted in collating these entries with those in a catalogue such as that of University College, where no abbreviations are used, and where the order is consequently quite different. It would be useful for scientific workers in general, as well as for librarians, if the abbreviations used in the "World List" could be standardized.

Some catalogues give fuller details than others. The Science Library, South Kensington, gives only a list of current periodicals, without saying if the whole set is in the library or not, or whether it is complete. For practical purposes, therefore, the list is of limited use. The University of Glasgow list does not say (either on the cover or inside) whether the journals are current or not, or at what volume the set begins. If the librarian of another library wished to borrow, for example, the first volume of "Chemical Abstracts" from Glasgow, he would have to write asking if it were in the library, for from the catalogue he cannot tell if this set is complete, or if it consists of recent volumes only. The University of London list says "Some minor imper-

* This difficulty is overcome in the "World List," which ignores such words as regards arrangement.

fections are not indicated here, because every effort is being made to supply the missing parts," while University College, having issued a catalogue rather than a hand-list, less optimistically chronicles every part missing at the time of going to print, giving the pages that are wanting in each case.

The University of Liverpool, like the "British Museum Catalogue of Periodical Publications," places each periodical, whether issued by a society or not, under the town in which it is published. It is rather a strain on the librarian to try to remember that "Janus" is published in Amsterdam, that the "Paidologist," issued by the British Child-Study Association, is entered under Cheltenham, and that "Pathologica" appears under Genoa. There is, however, a general index at the end, so that the journals always can be found.

The University of Aberdeen "List of Current Serials" is arranged according to subjects, with a decimal classification. It is, however, often difficult to find the journals required, and to know why some are placed under such headings as "Academies," "Local," "Universities and Colleges," and not under more specific subjects. Presumably Aberdeen University possesses all the sets issued under the title "University of California Publications," since these appear under the category "Universities and Colleges": there are, however, subject headings in the Aberdeen catalogue for Botany, Geology, History, Mathematics, Physiology, Zoology, &c., in all of which subjects the University of California issues a series of "Publications." On the other hand, Aberdeen puts "Missouri University Studies" under the heading "Modern Languages," since it possesses only the "Literary and Linguistic Series."

Dr. Leiper's catalogue of "Periodicals of Medicine and the Allied Sciences in British Libraries" arranges the periodicals according to the countries in which they are published, the countries themselves being placed in an order of Dr. Leiper's own, so that one often has to look up a journal in English under the British Isles, the Colonies, or United States, and a journal in German under Germany, Austria, or Switzerland, before finding it. No index has been supplied.

All the catalogues mentioned have merits, but it will be agreed from the above remarks that their sphere of usefulness would be much wider if they were uniform in main essentials: that is to say (1) in form, (2) in order of entry, and (3) in indication of completeness of sets.

(1) The title of the periodical itself in all cases rather than the name of a society or a town would seem to be simplest for the ordinary reader. If desired, a list of societies could be added with reference to entry numbers only. (*See below.*) Naturally, users of the Dewey or similar systems will enter periodicals in their classified catalogue as usual in the periodical or society section as the case may be: if, however, they publish a separate periodical list, this could be arranged as suggested here without interfering with their main catalogue.

(2) The order in which the entries are arranged must be alphabetical, but personally, from practical experience, I prefer

the method employed by the "World List," *i.e.* alphabetical according to essential words (disregarding prepositions, &c.), rather than strictly alphabetical. I suggest that all entries in a printed catalogue of periodicals should be numbered. This saves the time of the student, since cross-references can be made to the numbers instead of to a long and often complicated title. It would have saved much trouble, for instance, in the "World List" if the cross-references in the case of periodicals in Russian script had been made to numbers. Omission of such titles also saves space in the catalogue and money in printing.

(3) Each entry should show where the set begins, whether it is in progress or not, and whether complete.

The following took part in the discussion:—Mr. J. F. Pownall; Miss H. A. Ball; Mr. H. Rottenburg, M.A., M.I.E.E.; Dr. S. C. Bradford; and Dr. Walter Clark, F.I.C., F.R.P.S.

The following Resolution was passed for submission to the final general session of the Conference:—

> *Resolved:* That ASLIB should refer the question of uniformity in the cataloguing of periodicals to the International Institute of Bibliography in Brussels.

GENERAL SESSION.

Saturday Evening, September 24th, 1927.

RECENT DEVELOPMENTS IN CONNEXION WITH THE SCIENCE LIBRARY.

By Colonel Sir HENRY LYONS, F.R.S.
(Director of the Science Museum).

The Science Library, which is attached to the Science Museum at South Kensington, owes its existence to the amalgamation of two independent collections of books, and consequently its early development can be traced along two independent paths.

In 1840, when the Geological Survey of Great Britain and the Museum of Economic Geology were founded, the first Director, Sir Henry de la Beche, contributed the whole of his own library of scientific works to form the nucleus of a library for the use of the Officers of the Survey and Museum. This collection was added to from year to year, and in order to meet the demands of the School of Mines, which was opened in 1851, the library was gradually developed into a general library of science containing works on geology, palæontology, mineralogy, mining, metallurgy, natural history, chemistry, and allied branches of science.

In 1854 a special exhibition of English and foreign educational appliances and books was held in St. Martin's Hall, Long Acre, under the direction of the Society of Arts. When the exhibition was closed much of the material was left at the disposal of the Society, who handed it over to the Science and Art Department when the South Kensington Museum was founded in 1857. Here a reading-room was provided, and the collection was augmented by gifts and purchases of text-books on various subjects, reports and works on all aspects of education, and by the transfer in 1876 of the library of general literature, which had been formed at the central office of the Committee of Council on Education for the use of Inspectors.

In 1882, when the Science teaching of the Department of Science and Art was reorganized, the need for a national Library of Science was felt, and it was decided to transfer from Jermyn Street to South Kensington all books in the Library of the Museum of Practical Geology which were not required by the staff of the Geological Survey. These books were added to the books on scientific subjects which were already in the Educational Library, and thus the Science Library was formed. In 1886 a complete set of the publications of the Patent Office was added, and from that time the library has been steadily developed as a library of science.

In 1883 the number of volumes was estimated at 44,000; by 1908 it had increased to 105,000, and now it contains 192,000 volumes, although the works of a purely educational character have in the meantime been transferred to the Library of the Board of Education at Whitehall.

The Science Library has for many years provided the public with access to a large collection of scientific literature, in which

periodical literature has always been exceptionally well represented, and this branch has of late years been rapidly developed. A hand-list of short titles of periodicals current in the Science Library, which was published in 1912, contained about 570 titles, while the latest edition, which was published last year, contains more than 4,000 titles of periodicals current since 1910, and these are being added to rapidly, some 1,400 having been acquired during last year.

Although the contents of the Library were being steadily added to, the number of readers did not show any very material increase, and it became clear that if it was to be really useful to scientific workers the privilege of borrowing books from it, which had already been granted to the staff of the Imperial College of Science and Technology, should be extended as widely as possible. This has now been done, and all approved scientific institutions or societies where scientific research is being carried out by their members can borrow books, &c., from the Science Library. This has been in operation only for about a year, but experience has already shown that it meets a need, and it should enable institutions to effect economies by no longer providing journals which are but rarely required by their members. It is the aim of the Library to possess as complete a collection as possible of the scientific periodical literature of the world for the use of scientific workers in this country, and at the present time the number of these in the Science Library is about 9,000, and these are being constantly added to.

Since it seems very probable that there will never be a very large increase in the number of readers using the Science Library, its policy has recently embraced two other aspects of library work. One of these, the maintenance of a comprehensive collection of periodical literature, has just been mentioned; the other is to facilitate reference to the information which has already been published. Much time and energy can be saved if existing information on any subject can be made easily available to any worker who may have occasion to use it.

The Library already possesses a complete card subject index on a decimal system of classification to every book which it contains, as well as a complete set of the great biological card bibliography published by the Concilium Bibliographicum at Zürich. It also has a set of the Index technique of the Institut International de Bibliographie at Brussels, and many other bibliographies. A few months ago the Library acquired a collection of about 350,000 subject index cards covering the thirteen years 1902-1914, and of about as many unmounted bibliographical subject-slips; these two groups provide nearly three quarters of a million references to the scientific and technical literature which has been published during the period 1901-1924, and as they are all classified on the Brussels extension of the Dewey decimal classification, they fall into line with the indexes of the Science Library, where the same system is employed.

Practically all the available material that has been classified by this system has now been gathered in the Science Library, and it includes :—

1. The card repertory (1902-1914) of a well-known continental Bibliographical Institute that has recently ceased to operate, containing about 350,000 cards.
2. "Bibliographia Anatomica";
3. "Bibliographia Biologica";
4. "Bibliographia Palæontologica";
5. "Bibliographia Physiologica";
6. "Bibliographia Zoologica"

(These five bibliographies comprise about half a million printed cards from 1896 onwards, published by the Concilium Bibliographicum, Zürich);

Together with the following bibliographical periodicals, which are being cut up, mounted on cards, and amalgamated with the above.

7. "Bibliographia Geologica," 1801-1904.
8. Optical Society, "Transactions," Index to Vol. I to XXV and onwards.
9. "Optician," Revue of optical literature, 1927, and onwards.
10. "Revue de l'Ingénieur et Index technique," published by the Brussels Institut de Bibliographie, 1903-1925.
11. "Bibliographie technique," 1923-24. Continued as:
12. Nederlandsch Instituut voor Documentatie en Registratuur: "Mededeelingen," 1925, and onwards.
13. "Le Mois Scientifique," 1911-1914. 1919.
14. "Technos," 1920-1924.
15. Koninklijk Instituut van Ingenieure, "Aanwinsten van de Bibliotheek," 1925, and onwards.
16. "Nederlandsche technische wetenschappelijke Literatur," 1924, and onwards.
17. "Revue général de l'Electricité," Documentation, 1921, and onwards.
18. "Chimie et Industrie," Documentation, 1920, and onwards.
19. "Sciences administratives et les tablettes documentaires menuisibles," 1925, and onwards.
20. "Photographic Abstracts," 1927, and onwards.
21. Société française de Photographie, "Bulletin," 1925, and onwards.
22. "Science et Industries Photographiques," 1925, and onwards.

It is intended that other important bibliographies that are not classified on the same system shall be reclassified gradually, so that their entries also can be intercalated in place in the general card-index with other references to the same subjects.

This great subject-matter index will be comparatively simple to understand and rapid to use. Having ascertained from the alphabetical index of subjects the number or numbers of the classes that relate to the various aspects of the subject to be investigated, all the cards bearing titles of recorded information that is pertinent will be found together in chronological order under the corresponding numbers.

By the end of this year the preparation of this subject-matter index will have advanced sufficiently for it to be made available to the public, when its extent will be approximately as follows:—

Subject.	No. of Bibliographical References.	Approximate Period Covered.
Mathematics	100,000*	1893 &c.
Physics	15,000	1903 &c.
Geology	48,000	1801-1904
Biology General Biology Palæontology Zoology Anatomy Physiology	200,000	1896 &c.
Steam and Locomotive Engineering ...	39,000	
Electrical Engineering	61,000	
Telegraphy and Telephony	2,700	
Motors, Transmissive Machinery, Machine Tools, and Workshop Practice	45,000	
Mining and Economic Geology ...	30,000	
Bridges, Roads, Railways	33,500	
Canals, Docks	10,000	
Hygiene, Public Health	11,000	1903 &c.
Water and Road Transport	19,000	
Aviation	4,500	
Communications, Transport	19,000	
Chemical Technology	76,000	
Metallurgy	29,000	
Building Construction	10,000	
Agriculture, Economic Botany, and Forestry	250,000*	1919 &c.
Other Subjects	100,000	1903 &c.
Total	1,112,700 References.	

For those who are unable to visit the Library, lists of books and papers will be typed from the cards, so far as the general work of the Library permits. Photostat copies of articles can be furnished on payment.

Interest in the Brussels extension of the Decimal Classification continues to grow, and the number of periodicals that use the Code to increase. As more bibliographical undertakings adopt this system, their publications also will be cut up and intercalated in the index in the Science Library, which will thus gradually become more and more comprehensive.

The Departmental Committee which was appointed by the President of the Board of Education to inquire into the adequacy of the library provision already made under the Public Libraries Act has recently issued its report.†

* These sections require reclassification, and therefore may not be completely arranged until some months later.

† "Public Libraries Committee: Report on Public Libraries in England and Wales." Cmd. 2868 London. H.M. Stationery Office, 1927, page 386.

Under the scheme which is proposed a considerable proportion of the books for which application will be made will be scientific literature and, in particular, scientific periodicals. The necessity for a central library to provide for the needs of scientific workers has been widely recognized, and this was emphasized by Dr. Chalmers Mitchell at a conference of the Association of Special Libraries and Information Bureaux in 1925 when he said: "Some of the periodicals are contained in no library in Great Britain. I am glad to be able to state that the library of the Science Museum is making a great effort to fill the gap. In my view there is no more urgent need than the establishment in this country of a central library, the duty of which shall be to contain a copy of every periodical publishing scientific research." The nucleus of such a library already exists in the Science Library at South Kensington, with its great collection of periodicals. The Committee in their Report suggest that the most easy and least expensive way of solving the problem will be to make the Science Library more complete, and they recommend that an additional sum of £3,500 a year, with a small contingent increase of staff, should be granted to enable the Science Library to obtain most of the volumes of which it stands in immediate need. The Science Library has already assumed many of the functions of a central library by the extension of borrowing facilities to approved institutions where scientific or technical work is carried on, and should be the principal source on which the Central Library will depend for the supply or loan of books needed by research students in science.

If scientific research is the foundation of commercial prosperity, it is no less true that such research cannot be carried out efficiently without the means of consulting the records of previous work. The organization necessary to secure this end would not be very great, while the benefit to learning, research, manufactures, and trade can hardly be estimated.

SOME NOTES ON THE WORK OF THE INTERNATIONAL INSTITUTE OF INTELLECTUAL CO-OPERATION.

By Dr. J. E. DE VOS VAN STEENWIJK
(Chief of the Section of Scientific Relations.)

It is with much pleasure that I recall my first contact with the members of your Association at the Third Conference, and I regard it as a pleasant duty to keep you informed of the progress of events at the Institute at Paris. As I consider it would be superfluous to restate the general scheme of organization at the Institute, I propose just to pick out a few questions which I feel are likely to be of special interest to the members of this Association. Before doing so, however, I should like just to mention a change that is proceeding in the financial basis of the Institute which I consider of vital importance in regard to the international standing of the Institute.

As you are no doubt aware, the Institute does not draw a penny from the funds of the League of Nations, but owes its existence to the munificence of the French Government. However great may be the credit thus reflected on that country, this state of affairs cannot be considered satisfactory for an Institution the work of which is of concern to every civilized country. Formal acknowledgment of this was made at the last Assembly of the League, and certain countries such as Italy, Austria, Hungary, Czechoslovakia, Switzerland, and Poland are now contributing to the maintenance of the Institute; it may be confidently anticipated that the number of contributing countries will be increased during the course of the next few years.

Coming now to the technical activities of the Institute, let us first consider the subject of International Library Co-operation. Following a preliminary survey (published in the "Bulletin of the Section for Scientific Relations" for November, 1926, and May, 1927)*, a committee of Library experts (on which the English member is Dr. Cowley, Librarian of the Bodleian) outlined a scheme of co-operation, which has recently received the approval of the plenary committee at Geneva†.

* This Bulletin, together with the other publications of the Institute, is on sale at the Presses Universitaires, 49 Boulevard St-Michel, Paris V.

† The committee of experts recommended:

1. That a special Library Service be constituted within the Section of Scientific Relations of the International Institute of Intellectual Co-operation. The duties of this Service shall, in the first instance, be:—

(*a*) To provide a means of contact between the various national information services already existing.

(*b*) To facilitate the creation or development of central national services designed to guide scholars and investigators in regard to special collections in their branch of study, and, if possible, as to the libraries containing the books and documents needed by them.

2. That each of these national services provide the central service at the Institute, with all necessary information as to their equipment. This collaboration should enable the national services (or, when such service does not exist, the State Library) to be used, either themselves to provide information available for the special needs of scholars and investigators, or to direct them to the chief specialized libraries.

3. That this Service, in accordance with the previous recommendations of the International Committee on Intellectual Co-operation, should investigate the possibilities of a more elastic and economical system for the lending of manuscripts and books from one country to another.

Such a system should take into account the interests of scholars, the necessity of protecting valuable books, as well as the new photographic and other methods of reproduction which might reduce the wear and tear of the books, and obviate the necessity of their being sent abroad.

4. That this Service endeavour by all suitable means to increase the number of States accepting the Conventions of 1886 and of 1925 for the international exchange of publications and to improve the methods employed in the exchange services of the various countries.

It is of importance also to establish closer co-ordination in the individual countries between the libraries, universities, and other institutions engaged in this system of exchange. These institutions should combine to draw up lists both of the publications they have to offer and of their desiderata. It is also desirable that the publications received should be distributed according to the special needs of the various institutions concerned.

5. After having heard a statement from Mr. Bishop as regards the exchange of views which took place on the occasion of the Congress of the American Library Association at Atlantic City in October, 1926, with reference to the formation of an International Federation of Librarians' Asso-

A second and larger meeting of Directors of National and Central Libraries is to be held soon, when those present will be invited to draw up regulations embodying the principles already approved.

The second subject that I should like to recall is that of analytical bibliography in the different sciences. The Directors of five abstracting Journals or Institutions (English, French, German, Italian, and Spanish) in the field of economics have agreed to a definite and very detailed plan for co-operation. They have appointed a manager, and are now preparing a tentative budget. Negotiations are being conducted with the Social Science Research Council in the United States (whose representative attended the last meeting of the experts); this Council has under consideration a new abstracting journal for that country. Needless to say, it is extremely desirable that they should join the general agreement.

The same question is being tackled in the field of the Biological Sciences; here the amount of periodical literature is overwhelming, a provisional list drawn up by a committee of experts disclosing the existence of some thirty abstracting journals giving digests of articles scattered through some 10,000 to 15,000 periodicals.

In this field also the resolutions passed by the experts have been approved. I have recently visited the International Congresses of Zoology at Budapest and of Genetics at Berlin, at both of which I discussed this matter with specialists and arranged for further action.

Turning now to quite another matter—the conservation of printed matter and documents. Attention was called by the Belgian member of the committee, Minister Destrée, to the very bad state of preservation prevailing amongst documents printed in Belgium during the occupation; many of these are, in fact, already illegible. The daily papers are prominent offenders in this respect; yet it is clear that their interest for future generations of historians will be great. You will be interested to know that certain papers (*e.g.* the "New York Times") are printing a limited number of copies on all rag paper for distribution among libraries. Inquiry by the Institute has disclosed many interesting facts regarding action (whether preventive or ameliorative) that has already been taken in different countries. It has been decided to call a conference of experts comprising librarians, archivists, chemical technologists, representatives of the paper industry, &c.,

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ciations, the Committee of Experts is of opinion that Mr. de Vos van Steenwijk should attend the meeting of the British Library Association at Edinburgh in September, 1927, in order to ascertain the progress made in the realization of these proposals. When the matter has assumed definite shape a resolution should be adopted regarding the relations to be established between the new central service at the Institute and the contemplated International Federation of Librarians.

6. The Committee of Experts is of opinion that it is desirable to communicate the above resolutions, on the one hand to the Directors of National Libraries, and on the other to the Presidents of Associations of Librarians, and to bring about an exchange of views on this subject at the forthcoming Edinburgh meeting.

to compare the results achieved and advise about further action. I should like especially to call your attention to this subject, since, although the Institute is comparatively well informed as to what has been done in other countries, we entirely lack information regarding the position in Great Britain.

The next subject upon which I wish to touch is the activity of the "International Museum Office," an offspring of the Institute, which is acting as a liaison bureau between Art Museums in different countries. It publishes a Bulletin called "Mouseion" (Presses Universitaires), the first number of which contained amongst other things a survey of the Museums of the Netherlands. Surveys of the Museums of France and Poland are being prepared for forthcoming issues.

Lastly, I would like to draw your attention to the subject of Intellectual Statistics. It is sad to reflect that, while commercial statistics are so well provided for that we know to a nicety how many pounds of sugar or pairs of boots are manufactured in a country or imported by another, there are scarcely any data concertaining production and interchange in the intellectual sphere. In this the Institute is collaborating with the Institut International de Statistique, with the result that a carefully drawn scheme of statistical survey will be placed before the different Governments after approval by the General Conference of Statisticians that is to be held next winter in Cairo.

If I am to avoid an over-lengthy report, I must refrain from speaking of the many other activities of the Institute of interest equal to those to which I have already referred. For example, an International "Who's Who" which we are preparing for publication by an American firm; a conference on Year-books concerning scientific, literary, and artistic activities; a conference on the difficult question of translators and translations; preparation for a congress of Popular Art that is to be held next year at Prague, and so forth.

You will, however, I think have perceived that the Institute is busy enough, and that it is eagerly awaiting response on the part of the different countries to the suggestions and proposals that have been advanced.

INSTITUT INTERNATIONAL DE BIBLIOGRAPHIE.

PAR PAUL OTLET (Secrétaire Général).

Les travaux de l'Institut International de Bibliographie poursuivent leur cours. La Conférence Internationale tenue à Bruxelles les 26–27 juillet a été l' occasion de mettre en lumière des faits importants. Nous les résumons:

1°. La Conférence s'est tenue dans les locaux restaurés du Palais Mondial et l'Institut parait bien assuré désormais d'un siège stable. Une nombreuse participation, à la fois de gouvernements, de corps officiels et d'associations privées a témoigné de l'intérêt croissant suscité par l'œuvre entreprise.

2°. Faisant une distinction entre le plan complet, rationnel,

idéal et les plans de réalisation immédiate, l'Institut a présenté aux discussions de l'assemblée le programme d'une organisation du livre sous la forme d'un Réseau Universel pour la Documentation. La Conférence a retenu comme point de réalisation principal le Répertoire Bibliographique Universel avec (*a*) ses parties auteurs et matières, (*b*) comme méthode la fiche et la classification décimale, (*c*) comme moyen d'utilisation un service central de renseignements mis en relation avec tous les bureaux et offices existants ou à faire naître, (*d*) la généralisation des services photographiques dans les Bibliothèques possèdant les ouvrages eux-mêmes. Appel a été adressé aux Bibliothèques, organisations et auteurs pour qu'ils envoient leurs catalogues et publications à l'Institut International.

3°. Il a été délibéré des rapports avec la Société des Nations. Il est regrettable qu'aucun effort n'ait été fait par celle-ci pour mettre en vigueur la convention conclue en 1924 et les recommandations pour sa mise en vigueur formulée en 1925 par la commission spéciale d'experts qu'elle a désigné à cet effet (MM. E. C. Richardson, Higo Barigo, Godet). La Conférence a émis le vœu qu'il soit sorti du *statu quo* actuel.

4°. Il a été montré par des exemples les liens qui unissent la Bibliographie, les résumés ou abstracts, les catalogues particuliers et collectifs. Ce sont trois aspects d'un même problème, l'Information Scientifique et Technique—ici générale, là spécialisée; ici encore sommaire, là détaillée.

A la vérité, le livre doit être considéré comme l'outil du travail intellectuel Or le travail requiert aujourd'hui organisation, rationalisation, standardisation, coopération au même titre que le travail manuel, industriel, économique. L'organisation du livre (traités, encyclopédies, périodiques, annales, atlas, feuilles volantes, etc.), celle de l'Information, et de la Documentation, un des buts du livre, doivent être tenues comme une partie intégrante de l'organisation du travail intellectuel elle-même. Celle-ci est entreprise de toute part en ce moment et les Associations Internationales s'en occupent de plus en plus.

5°. Il faut rendre l'organisation possible par le perfectionnement des méthodes, par l'adoption de plus en plus générale de la classification décimale qui est un élement considérable de succès. L'Institut International de Bibliographie a heureusement pu trouver les moyens matériels et intellectuels pour publier une édition nouvelle de Tables de la Classification décimale parue en 1905. En ce moment plus de 600 pages deux colonnes de la nouvelle édition sont imprimées. De précieux concours ont pu être obtenus en tous pays pour la préparation scientifique des tables. Celles-ci constituent un développement des tables antérieures et non point des tables nouvelles. Ainsi l'oblige la stabilité bibliographique et bibliothéconomique. La classification demeure conventionnelle et auxiliaire, instrument principal de la coopération, moyen de constituer facilement des catalogues, répertoires, collections avec des éléments provenant de centres de production divers concertés sur la base d'un plan divisant les tâches.

Un effort sérieux est fait pour harmoniser l'édition de Bruxelles avec la version de la classification éditée aux Etats-Unis. Le rapprochement est établi sur cette base : nombres simples et abrégés

pour l'usage des bibliothèques et collections; nombres complets, détaillés et composés de chiffres et symboles (temps, lieu, forme, langue, relation) pour l'usage des Bibliothèques, catalogues index et répertoire.

Les applications de la classification décimale ne se bornent pas aux livres ; les applications aux papiers administratifs se multiplient, notamment en Hollande (Communes, Provinces, Administrations diverses de l'Etat, grandes industries). L'application aux brevets d'invention a été étudiée. Elle a été proposée au Bureau International de Berne pour coordonner les classifications des brevets actuellement divergentes de pays à pays.

6°. La participation britannique à la conférence a été très sympathiquement accueillie. Etaient représentés: le British Museum, la Library Association, la Science Library. C'est avec satisfaction que la Conférence a appris la formation en Angleterre d'une " Association for Decimal Bibliography " et elle a confié à la Grande Bretagne la Présidence de l'Institut pour l'année nouvelle. Les organismes français, allemands, italiens, hollandais ont pris part à la Conférence. Les allemands qui ont créé leur Gesammt-Katalog, doublé de l'Auskunftbüro, ont marqué la concordance des méthodes suivies pour l'organisation universelle avec leur organisation nationale. Les Russes, par leurs communications écrites (présence personnelle des délégués impossible) ont fait connaître leur sympathie pour la coopération internationale dont chez eux ils ont adopté officiellement les méthodes. Quant aux Américains, l'Institut International a demandé leur aide pour avancer le répertoire Bibliographique Universel et, à cette fin, il a proposé à l'American Library Association, d'accord avec quelques grandes fondations des Etats-Unis, d'assumer directement à Bruxelles pendant quelques années la continuation du travail. Les forces particulières européennes ont amené le Répertoire à 13½ millions de fiches ; les forces américaines devraient pouvoir le porter rapidement à 25 millions.

7°. Complémentairement l'Institut voudrait reprendre deux Publications qu'il a dû abandonner depuis la guerre faute de moyens: " La Bibliografia Universalis " et la " Liste-Annuaire des centres principaux d'information bibliographiques " pouvant être tenues comme des " stations " du grand Réseau mondial à former par la mise en relation à l'intermédiaire de l'Institut International, lui-même agissant comme *clearing house* pour les recherches. Chaque pays devrait établir sa propre bibliographie et sa propre liste. (" The ASLIB Directory " est un admirable exemple.) La liste internationale en serait un cumulateur selectionné, coordonné et classé. L'Institut possède déjà à ce sujet des nombreux matériaux.

8°. La Conférence Internationale a reçu d'intéressantes communications sur la technique de la documentation (appareils, dispositifs, procédés) et une Commission au sein de l'Institut International Bibliographique a été constituée pour signaler et comparer les données à ce sujet. Une collection est formée depuis plusieurs années. Parmi les communications il faut mentionner celles concernant la reproduction photographique. La Bibliothèque Nationale de Paris a fait présenter les spécimens de reproduction photostatique de son grand catalogue dont l'impression est suspendue. L'Institut

International Bibliographique a montré les essais de reproduction du Répertoire Bibliographique Universel au moyen du Photoscope, l'appareil mis au point avec sa collaboration. Le procédé est micro-photographique permettant à la fois le reproduction sur papier ou fiche à toute échelle, et la simple projection sur table de travail ou à l'écran des documents.

Certe le livre dans sa production, sa conservation, sa distribution, son utilisation fait constamment de nouveaux progrès. On les ignore trop, ou l'on est obligé de constater l'impuissance à les appliquer quand on demeure dans l'isolement. Un grand centre commun tels que les Conférences internationales et l'Institut International sont des instruments pour l'information de ces progrès et pour la coopération qui peut en généraliser les avantages.

SOME OBSERVATIONS ON THE NEDERLANDSCH INSTITUUT VOOR DOCUMENTATIE EN REGISTRATUUR.

By F. DONKER DUYVIS.

The Dutch Institute of Documentation was founded in 1923 by representatives of learned societies, both scientific and technical, of governmental institutions and of a few special libraries.

According to its statutes the aim of the Institute is to render accessible the products of intellectual labour; it tries to fulfil this purpose by the following means:—

(1) A bibliographical service which supplies information on technical and scientific literature.

(2) A service which supplies copies of review articles, &c., which are not readily available in Holland.

(3) The issue of bibliographical publications.

(4) The study of methods of documentation and of classification, sizes of documents, &c.

The bibliographical service is based on the principle of co-operation. In organizing this service two ways were open; one might either have established a centralized card system, whereby information could be given by a central secretariat; or else have decentralized the work, utilized the information in the possession of existing specialized services, and thus have given the central secretariat the character of a clearing-house. We chose the latter solution. It may be admitted that though a centralized organization has the advantage of quick service, it would only be able to supply thorough and scientific information if it can draw on the services of a large staff of experts. It would be impossible either to pay such a staff or give each of its members sufficient work to do. The decentralized system is somewhat slower in action but there is some guarantee that the information given is accurate and reliable. Moreover, the best use is made in this way of the existing services. The Institute is of opinion,

that bibliographical information should be given by persons who have experience both of bibliography and of the scientific problems on which people seek for information. Perfected methods of classification and other labour-saving devices may be of great importance, but are only of real value in the hands of those who have expert knowledge as to how they should be used.

The Dutch Institute of Documentation is concerned chiefly with the supply of information on special scientific or technical questions. The public libraries of Holland are well equipped for supplying information of a general and superficial character, and this task is accordingly left to them.

Our service of supplying copies of literature is very simply organized. We are in constant touch with several photostatic services in Holland as well as abroad. If a copy of an article in a periodical that is not available in any Dutch library is required, we try to obtain a back number from the publisher or from a dealer specializing in back numbers. If it is not possible to obtain a back number we ask a collaborating institution in the country where the paper was published to procure for us a photostatic copy. We are glad to state that we are always helped in the most cordial way by colleagues abroad; we owe much especially to the kindness of the Research Information Service of the U.S. National Research Council and to the Auskunftsbüro der Deutschen Bibliotheken.

At present the Dutch Institute of Documentation has not published many bibliographies. The most important publication is the "Mededeelingen No. 6" of the Institute, which is an international bibliography of periodical technical literature. With regard to methods of documentation, the Dutch Institute has given special attention to the development and application of the decimal classification. The secretariat of the committee on decimal classification of the International Institute of Bibliography has been for some years located in the Dutch Institute of Documentation. Various sub-committees are working on the extension of the international classification. It should be noted that in Holland this classification is applied on a large scale to the classification of files, commercial correspondence, municipal administration, and the like. Standardized methods of bibliography may be applied to books, pamphlets, and scientific papers as well as to letters and correspondence files. From the point of view of organization there is little difference between these various kinds of documents. For those reasons the work of the Institute of Documentation is not confined to matters of bibliography, but is concerned also with improved efficiency in office management.

REPORT ON THE COMMISSION INTERNATIONALE DE LA CLASSIFICATION DÉCIMALE (C.C.).

By F. DONKER DUYVIS,

Honorary Secretary.

The Commission was formed in a provisional way by the Institut International de Bibliographie (I.I.B.) in 1923. Its constitution was determined in June, 1924. The task of the Commission is to

elaborate and determine the international decimal classification. The members of the Commission are official representatives of the sections of the Institut International de Bibliographie. For special topics sub-committees are formed, onto which experts who are not members or the I.I.B. may be co-opted. The Nederlandsch Instituut voor Documentatie en Registratuur has undertaken the secretarial work.

At the commencement of its task, the Commission met with two important difficulties. (1) There was discordance between the international tables of decimal classification and the original American tables of a less extended character. (2) The old Manual of the decimal classification of 1905 was out of print, but very few copies were available for the use of members of the commission. With regard to the first difficulty: Miss Dorcas Fellows, editor of the "Dewey Decimal Classification," was appointed general secretary for the purpose of co-ordinating the two codes. It became clear that for practical reasons it would not be possible to unify the two editions immediately, but it is intended in preparing future editions of both codes gradually to work towards this end. The American edition is applicable more particularly to general libraries, whereas the international edition is more applicable to special libraries, correspondence files, and special bibliographies. Although the collaboration of a large number of experts was desirable the lack of copies of the old Manual made it imperative to leave the preparation of the new code to a small staff of editors.

Responsibility for the expansion of the sections relating to General Works, Philosophy, Religion, Sociology, and Philology was assumed by the general secretaries of the I.I.B., while the secretary of the C.C. assumed responsibility for those relating to Mathematics, and the Natural, Medical, and Technical Sciences. The work has now reached a stage where Sections 0 to 5 of the decimal classification are in print. Sections 0 to 4 required no special rearrangement as, although largely extended, it was possible to use the existing system as a basis.

The section on Religion was expanded with the aid of the Abbé Mercier. Dr. Ragnar Frisch and Dr. Horst expanded the section on Statistics. The sub-divisions of the Insurance section were prepared by a committee (of which Mr. Schuddebeurs acted as secretary) of the Nederlandsch Instituut voor Documentatie. Folklore was expanded by utilizing the scheme of the Ethnological Institute of the University of Utrecht, while Dr. Debevere of Brussels collaborated in developing the section on Philology. In Section 5 of the system (Natural Sciences) it was considered necessary not only to expand the classification but to recast certain portions that were more than twenty-five years old and almost wholly out of date. The secretary of the C.C. prepared the new sections and submitted them as far as was possible to expert criticism. Valuable help was given by the Science Library, South Kensington, Miss Reading, Dr. Bradford, Dr. Clark, and Prof. A. Pollard contributing largely to the improvement of the tables. The section of Pure Mathematics was based on the system of the "Revue Semestrielle des Sciences Mathématiques" (edited under the auspices of the Amsterdam Mathematical Society); the same system served for the

extension of the Astronomical section, in which assistance was also derived from the cosmographical classification of Prof. Bigourdan of Paris. To the extension of Physics Dr. Kolkmeyer of Utrecht University gave his help as a scientist. Although the general scheme of the decimal classification in the field of Physics is rather old fashioned, it has been felt better to maintain this scheme rather than to alter it during a period in which so many new conceptions are emerging. A complete revision will require to be carried through later. Physical Chemistry and Inorganic Chemistry have been re-arranged in large measure in the new edition. Organic Chemistry has been based on the scheme of Meyer Jacobson. Crystallography has been expanded in close association with Physics. Mineralogy has been classified in part on the Groth system. New branches of Geology such as geophysics and geochemistry have been introduced. The Stratigraphical section required complete revision, and a special sub-committee composed of geologists of Delft University (with Dr. Kruizinga as secretary) took the matter in hand. Although the sections on Palæontology, General Biology, and Zoology have been relatively little expanded, the section on Botany has been very largely revised; Botanical Physiology needed much expansion and in this the help of Miss Reading, of Miss Kleynhoonte, and Dr. Uittien was of great value. The Engler scheme was chosen for Systematic Botany. The Commission owes the elaboration of the Medical section, the printing of which has just been begun, mainly to Dr. Réné Sand, general secretary of the Ligue des Sociétés de la Croix Rouge. Physiology, which was drafted originally by Prof. Richet, has been worked out by the Concilium Bibliographicum of Zürich; for Optics the Commission is indebted to Dr. W. Swaine. Hygiene was expanded by Dr. Horst and Mr. Gorter. It is intended to continue the expansion of the technical sections in similar fashion—*e.g.* the expansion of the Photographical section has been drafted by Dr. Clark with the aid of the Société Photographique de Paris.

As soon as the new code appears it will be put to practical test; a supplement will be issued after a lapse of one year in order to permit of the introduction of the necessary additions. Following on the issue of the new edition, too, the wider organization envisaged by the Commission on decimal classification, designed to secure in every country of importance the co-operation of specialized bibliographical experts, will be brought into action.

THE SPECIAL LIBRARIES ASSOCIATION OF DENMARK.

By O. THYREGOD, M.A. (President).

Special Libraries have spread over the whole of Scandinavia; several of importance could be named which are at work in the different specialized fields. But there is no connecting link; the different countries possess no Association having as its objective the furthering of the interests of Special Libraries either singly or collectively. Only in Denmark has a beginning been made.

A number of Danish Special Librarians representing Agricul-

ture, Industry, Technology, Commerce, Insurance, and Art held a meeting in October, 1924, to discuss the possibility of co-operation and collective effort. It was on this basis that the Association was founded; it united in its membership all the more important Special Libraries.

Up to the present the efforts of the Association have been concentrated on the purely technical side. A need was felt for a list of all the foreign publications to which the different libraries had been subscribing during the last generation. The compilation of such a union-list was taken up as the first task of the Association, and proved no easy matter in view of the confusion in the different collections caused by the world-war. The first plan was to have the catalogue printed; but in consideration of the great expense and the small use likely to be made of such a list outside Special Libraries, it was decided to make just sufficient copies of the original type-written cards to provide each library with its own card catalogue. Thus members can easily see when a certain publication is required whether it is to be found in a Special Library in Denmark, whether it is to be found in its complete form in any particular library, or whether the different issues must be sought for in several libraries. The card catalogue has only recently been completed and sent to the different libraries, and it therefore remains to be seen whether it will fulfil the purpose desired; but so far as can be judged this object should be attained.

Another project was a union-catalogue of the latest acquisitions in the different libraries, through which one might learn of the latest technical books, say, acquired by one library, and of recent books on economics in another This idea was, however, given up, as an arrangement was made by which the State undertook to compile lists of new acquisitions in all libraries other than those in private hands.

An attempt is, however, being made to compile a Directory of Special Libraries, indicating their contents, their field of activity and date of foundation. This Directory will eventually be printed, when a copy will be forwarded to ASLIB; it will naturally not be so extensive as the ASLIB Directory or that published by the Special Libraries Association of America. What has already been accomplished will be supplemented by further activities directed towards establishing a link between Special Libraries and the National and Public Libraries. Technical libraries in Denmark are not the only ones that have taken up membership in the Special Libraries Association, which includes Libraries of Art, Education, and the Humanities generally.

CARNEGIE UNITED KINGDOM TRUST.

By A. B. HYSLOP (Treasurer).

The statement made on behalf of the Carnegie United Kingdom Trust at last year's Conference dealt, in detail, with the "Outlier" policy, that being the branch of the Trust's general Library activities which is most closely connected with the work of ASLIB. There is no need to repeat what was then said, but, in supplement, it may be mentioned that during the past year five further specialist libraries have received grants from the Trust, and have become "outliers," while a few others have voluntarily agreed to co-operate with the Central Library for students on the "outlier" basis.

At a three-cornered Conference on the "outlier" question, held in November, it was generally agreed that the whole system was still at an experimental stage; representatives of specialist libraries who were present expresssd themselves as willing to continue the existing arrangements, relying upon the Trustees to take a reasonable view of the position, should it be found in future that undue demands were being made upon the stock of any affiliated library, or that the accepted conditions were proving burdensome in any other direction.

As members are already aware, the Trustees agreed in March last to make a grant of £500 towards the expenses of the Association's third year of work and a final grant of £250 towards the expenses of the fourth year. The Trustee's original financial support covered the first two years only, but they were favourably impressed by the very satisfactory progress which was being made at the end of that period, and they have agreed to help for two years more, in the confident hope that the Association will then be able to continue its activities independently. The Trustees are gratified also that the Directory is now almost complete.

NOTE ON "THE WORLD LIST OF SCIENTIFIC PERIODICALS."

By Dr. P. CHALMERS MITCHELL, C.B.E., F.R.S.
(Chairman of the Council of Management).

The second volume of the "World List" was published early this year, so that this great undertaking has now been accomplished. The volume contains a list of abbreviations of the titles of approximately 24,000 periodicals publishing the results of Scientific Research together with an indication of the libraries at a large number of centres in Great Britain and Ireland where the periodicals are filed. The list of abbreviations was compiled by Mr. W. A. Smith, of the Department of Printed Books, British Museum, with advice from Dr. A. W. Pollard, late Keeper, and Dr. Chalmers Mitchell. Mr. Smith took into consideration a number of existing schemes of abbreviation, none of which, however, had been applied to so large a number of periodicals.

It would be an enormous gain, far outweighing the temporary

inconvenience of changing existing systems, if the "World List" abbreviations were adopted universally. Some progress has been made in this direction. In this country, the "Zoological Record," the most important annual bibliography of Zoological Research published in any country, has adopted the "World List" abbreviations in preference to its own. The Imperial Bureau of Entomology has taken a similar course. The Association of German Librarians is going to adopt the list, and the Conference on the Co-ordination of Biological Bibliography called by the League of Nations has "taken into favourable consideration" a proposal to recommend its universal employment.

SOME NOTES ON THE NOTGEMEINSCHAFT DER DEUTSCHEN WISSENSCHAFT.

By Dr. A. JÜRGENS.

The Notgemeinschaft der Deutschen Wissenschaft (Emergency Society of German Science) (Berlin C 2, Im Schloss) is an organization of German science of a centralized character, which aims at concentrating the activities of the various universities and academies in the different federal states of Germany. It was founded in October, 1920, all the German academies, universities, technical high-schools and high-schools for agriculture, veterinary science, forestry, and mining being associated in the formation of the new body in their desire to help German research work in the time of trouble and want caused by post-war conditions. Amongst its members are the Kaiser Wilhelm-Gesellschaft zur Förderung der Wissenschaften (Society for the promotion of Science), the Gesellschaft Deutscher Naturforscher und Ärzte (German Society for the study of Natural Science and Medicine), and the Deutscher Verband technisch-wissenschaftlicher Vereine (German Union of Technical Societies). The new body is constituted on a parliamentary basis, its officers being elected directly by the votes of seven thousand scientists in Germany. The executive body is the "Praesidium," under the presidency of His Excellency Staatsminister Dr. F. Schmidt-Ott, formerly Prussian Minister of Public Education. The Notgemeinschaft is advised by special commissions, each consisting of three to six professors acting in twenty-one scientific spheres—namely : 1, Theologie (Theology); 2, Rechtswissenschaft (Law); 3, Staatswissenschaften (Political Economy); 4, Medizin (Medicine); 5, Philosophie (Philosophy); 6, Alte und Orientalische Philologie (Classical and Oriental Philology); 7, Neuere Philologie (Modern Philology); 8, Geschichte (History); 9, Kunstwissenschaften (Art); 10, Völkerkunde (Folklore); 11, Biologie (Biology); 12, Geologie (Geology), Mineralogie (Mineralogy), Geographie (Geography); 13, Chemie (Chemistry); 14, Physik (Physics); 15, Mathematik (Mathematics); 16, Bauingenieurwesen (Civil Engineering); 17, Hochbau und Architektur (Constructional Engineering and Architecture); 18, Bergbau und Hüttenwesen (Mining and Metallurgy); 19, Maschinenbau (Mechanical Engineering); 20, Elektrotechnik

(Electrical Technology); 21, Land und Forstwirtschaft (Agriculture and Forestry).

The approval of one of these special commissions is required for every application or scheme of scientific work, and the final decision must have the support of a central commission of eleven members formed from the different faculties, which body acts as a clearing-house between the different sciences interested. The administrative work is concentrated in the departments of working commissions of the Notgemeinschaft itself. The first of these, the Verlagsausschuss (Publications Committee), has to prepare the ground for obtaining support for printing first-class scientific books and periodicals which cannot be printed without financial help. It has been found to be absolutely necessary to encourage the German professor in his work, because it is not stimulating to write only for the writing-desk. Last year the Notgemeinschaft supported 378 standard works in all scientific subjects and 135 periodicals, mostly of a theoretical character, it being felt that for works and periodicals of more practical interest the publisher must bear the whole cost of printing. To put German science into touch with scientific achievements abroad was the first task attempted by the Bibliotheksausschuss (Library Committee).

After six years of war and monetary depreciation there was scarcely any information in Germany regarding research work abroad; it was therefore decided to put German and foreign science into communication through the exchange and supply of literature. First came the filling of the gaps in the stock of foreign periodicals at the two principal State libraries in Berlin and Munich, and step by step at the university libraries also; soon the library committee was compiling lists of standard scientific works produced since 1914, with some of which the university and technical high-school libraries were then equipped; variety in the selection was obtained on the one hand by special endowments for certain sciences, and on the other by all central libraries being furnished with the essential publications. The Fourth Standard List contained 7,000 entries. In the exchange with abroad the Bibliotheksausschuss is helping to meet the demands both of German and of foreign institutions by resuming pre-war exchanges on the old basis; it is also building up new means of exchange between Germany and foreign institutions, and serves as a clearing-house for this purpose.

In January, 1926, the Reichstauschstelle im Reichsministerium des Innern (Federal Ministry of the Interior) was formed to deal with the exchange of German official documents. Owing to its experience the Notgemeinschaft was entrusted with this work, too. The Reichstauschstelle is working on the same lines as the Notgemeinschaft, but is concerned only with official and semi-official documents. The Reichstauschstelle is serving as a bureau of international exchange on the basis of the principles laid down at the Brussels Convention of 1886.

The Bibliotheksausschuss has also built up an extensive system of direct exchange on the part of the German publications associated with it, and is serving to a large extent as a clearing-house for the exchange of duplicates between libraries in Germany

generally. A Suchzirkel (Book-finding Office) has also been established to aid in the discovery of wanted numbers of periodicals amongst the duplicate stock of the associated libraries.

The chief activities of the Notgemeinschaft are being directed more and more towards the encouragement of original research in technical and sanitary fields, special appropriations being made to the Notgemeinschaft for this purpose. The Apparateausschuss is arranging for joint research work amongst the professors of the various universities and assists them with apparatus and material. Another section of the Notgemeinschaft is providing promising young men with fellowships for research work. Travel for scientific purposes is also financed.

THE SPECIAL LIBRARIES ASSOCIATION (OF AMERICA) AND THE AMERICAN LIBRARY ASSOCIATION.

Dr. H. H. B. Meyer, E.M. (American Library Association), gave a short address on the work of the above organizations.

Mr. E. I. Robson, M.A., and Mr. E. Wyndham Hulme, B.A., participated in the discussion that followed.

SECTIONAL MEETING (A).

Sunday Morning, September 25th, 1927.

RATIONALIZATION IN INDUSTRY.

By Major L. URWICK, O.B.E., M.C., M.A.
(Honorary Secretary, Management Research Groups).

In the sphere of economics the whole tendency of the nineteenth century was towards a mystical or predestined explanation of phenomena. The individual was faced with the sudden development of power-driven machinery and the still more revolutionary sub-division and specialization of effort which that development made possible. In less than a hundred years a whole new technique was discovered and applied in every corner of business life. This impinged upon the customary ideas and habits of thought established as the result of centuries of handicraft production. Sociologists have long recognized that there is a definite and rather prolonged lag between the occurrence of a new set of external conditions and the necessary adaptation of the human mind and its established reactions to the altered circumstances. This lag operated on the economic thought of the nineteenth century with very curious results.

The chief need of the handicraft producer had been freedom from interference in the conduct of his affairs. He was essentially an individualist, dependent on his own personal skill and courage in every phase of the economic process. He bought his own raw material, worked on it with his own hands, and sold his own products in a limited local market. On a larger scale, the same conditions held good for those who engaged in commerce. Their one common requirement was some degree of order, some liberty from the continuous exactions of tax-gatherer and landowner, to enable them to pursue their livelihood in peace.

In the pioneer days of machine production, the same conditions appeared to observers to hold good. The need for experiment, the risks which had to be taken in an economic order adapting itself to an accelerated rate of change, placed a premium on bold initiative, aggressive self-reliance, and courageous inventiveness. A theory was quickly produced which accorded with the established habit of thought and at the same time appeared to reconcile it with the new conditions. It was postulated that in economic matters the individual always and at all times pursues his own best interests. Further, if this tendency is allowed to work freely, the purifying effect of competition will see that it functions so as to secure both material efficiency and the commonweal. The inexorable operation of economic laws will place the most fit in the seats of business power. All will be for the best in the best of all possible worlds.

It is only within the last decade and under a variety of influences that business men themselves have begun to shift their standpoint—at first tentatively, and now with increasing speed. This change is to be attributed in part to direct criticism from without. But this factor has not been, as yet, of great importance. Changes within the structure of industry itself, due to this

development of technique, have had far more influence on their thinking.

This process of change in technique has not by any means reached its full expansion, even to-day. But enough has already taken place to modify profoundly the nature of the material in which economic theory works. For instance, reference to immutable laws of supply breaks down in face of an improvement in means of communication which enormously facilitates monopolistic control of certain essential commodities, either by means of speculative absorption of market margins or by genuine acquisition of all available sources of production. Most important of all, the steadily increasing size of the industrial unit has revealed that the unmodified idea of individual competition provides at the best a crude and barbarous method of regulating the interests involved. The nice balance and adjustment of relationships necessary in a highly specialized modern business is simply impossible on a plain basis of "every man for himself." The social values involved in a great corporation, such as Armstrong's, or Lever Brothers, go too wide and too deep to be lightly abandoned to the chance of bankruptcy as the sole guarantee of efficiency.

For these reasons the blind acceptance of so-called "economic laws" as a complete and satisfactory explanation of human reactions to the economic environment and as a self-regulating process by which all difficulties are adjusted, has given way to a more questioning attitude. To take but a single instance in illustration of this trend, it is not fifty years ago that eminent economists were solemnly wrangling over the possibility that cyclical movements in world trade were due to the influence of sunspots. That is a far cry from the modern science of business forecasting—a science as yet in its infancy, which has already by the mere suggestion of its possibilities encouraged the government of the United States to spend large sums on the collection and prompt publication of the requisite statistics.

This movement, considered in its broadest sense as an effort to substitute factual analysis and logical arrangement for a blind reliance on the workings of an over-simplified view of human nature, business men are beginning to call "Rationalization." It is clear, therefore, that the conception of Rationalization which I wish to lay before you is both wide and deep. It involves, in effect, a completely new view of economics, a view enforced both by the methods and achievements of modern scientific thinking and, too, by the character and scale of the actual business units and operations which have resulted from the application of subdivided effort and mechanical power to the problems of world production. It is, in short, nothing less than the first echo of a world state with a single world economic order founded on exact knowledge. To some of us, at all events, its development and progressive acceleration seem almost inevitable.

It is only fifteen years since F. W. Taylor first became well known in the United States. Already an International Economic Conference has devoted more than half the time of one of its most important sub-committees to the discussion of the ideas and principles which were first expressed in their most elementary

form through Taylor's work and writing. When we consider the usual scale of growth of new and revolutionary ideas and their very gradual penetration into world consciousness, that is itself an astonishing fact. Still more astonishing in a sense is its inevitableness. As F. W. Taylor himself recognized, it is the logical consequence of the application of the exact sciences to industrial matters which followed from the use of machinery.

As he wrote in 1911 : "When men, whose education has given them the habit of generalizing and everywhere looking for laws, find themselves confronted with a multitude of problems, such as exist in every trade and which have a general similarity one to the other, it is inevitable that they should try to gather these problems into certain logical groups, and then search for some general laws or rules to guide them in their solution."* Indeed, rapid as the progress of Rationalization has been, and wide as is the scope of the subject, those who have made a study of it find themselves returning time after time to the work of F. W. Taylor and finding there the embryo of ideas which have, at a later date, been applied upon a scale which he never contemplated. While Taylor was trained as an engineer and had little or no knowledge of the sociological sciences, we find him fully alert to the possibilities inherent in the earliest work of experimental psychology. "There is another type of scientific investigation which has been referred to several times in this paper, and which should receive special attention, namely, the accurate study of the motives which influence men."†

I have been asked on several occasions why the term "Rationalization" has been substituted for the earlier title "Scientific Management" under which Taylor wrote. The explanation is a simple one. As in the case of all human effort, the new idea started with an individual. That individual necessarily worked in the terms of his own environment, originally quite a small engineering works. The thoughts which filled his mind were expressed in terms of that environment. The term "Scientific Management" thus became associated with a particular set of ideas centring round a special method of organizing and controlling a productive enterprise. But the broader conception of applying the methods of the physical sciences to the solution of economic problems does not cease with the shop. As the standardization and simplification work of the United States Government and of the International Standards Association, and the resolutions of the World Economic Conference have shown, this idea, which began in the Midvale Steel Works, has a significance far wider and deeper than that of a mere improvement in management technique. For this reason, it is perhaps fortunate that the term "Rationalization" has been developed and used to describe the new application of scientific method to the world's economic life, while retaining the words "Scientific Management" to define that portion of the field which is actually concerned with the executive control of a productive factory.

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* "The Principles of Scientific Management," page 103.

† *Ibid.*, page 119.

Mr. H. S. Person, the Director of the Taylor Society, in a memorandum submitted to the International Economic Conference, said: "The central idea in Scientific Management is stabilization and economy through control." He then proceeded to discuss the question of Cartels in relation to Scientific Management. He defined the problem as "The regularization and stabilization of world industrial conditions." He stated that one of the main difficulties likely to arise is to find a formula which provides for the elimination of the privileges of monopoly, and especially autocratic price control, and which provides a substitute for these privileges which will secure stabilization for industry through reasonable profit, and benefits to society through stability and progressive price reduction. He then asked whether "Scientific Management is not such a substitute; whether the International Cartel, organized in accordance with a formula, satisfactory to public opinion in all countries, and administered and managed in accordance with the principles and technique of scientific management, is not the very agency which will: (1) Effect economies in production and distribution which can be shared by members of a Cartel through reasonably stabilized sustaining profits, and by industrial society through industrial stabilization and progressive price-reduction; (2) Provide by its very technique the precise and detailed information which will sustain the formula agreed upon; namely as a measure of effectiveness of administration, economies effected, reasonableness of profit and reasonableness of prices."

This quotation has been given at some length because it indicates, in support of the contention raised at the beginning of this paper, how wide is the thinking of those who are most closely concerned with rationalization at the present time. The suggestion contained in Mr. Person's memorandum was curiously confirmed by an article in an unexpected quarter only a few weeks ago. The "Evening Standard" of July 28 wrote apropos some adverse comments of Mr. Justice Eve: "The Trust itself, by enlarging its size, enlarged not only its own horizons, but those of the whole world of economic theory. The vastness of its operations compelled it to take a statesmanlike rather than a tradesmanlike view of them, and it discovered that the right way to the creation of wealth was in the stimulation of the demand, not in oppressing the existing consumer, but in calling into existence new consumers and persuading them all to consume more. And there is no way of doing this save by cheapness and good quality, both made known by judicious advertising."

Quite recently an International Management Institute has been founded at Geneva for the co-operative study of problems connected with rationalization. In a memorandum submitted by this Institute to the Preparatory Committee of the Economic Conference, the scope of Rationalization in its practical application was defined as follows:—

> 1. *Technique,* including production planning, choice of site and production of building arrangement of workshops, choice of lay-out, of equipment, and of raw materials, organization and maintenance of store-rooms, transport within the factory,

supply of materials and tools, research into office methods and planning of offices, routing, use of card indexes, classification, use of statistics and charts, accountancy, costing, purchasing and sales department, and advertising.

2. *Psycho-physiology.*

(*a*) Individual, including time study and motion study, vocational selection and education, study of the functions of management, fatigue study, attention and monotony, study of the use of material, working conditions, improvement of equipment, lighting, heating, ventilation, workshop hygiene, occupational diseases, safety, and welfare.

(*b*) Collective. Systems including wage payment, profit-sharing and co-partnership, industrial relations, the work of a personnel department, workers' representation, and other methods of collaboration inside and outside the factory, with a view to the improvement of output.

3. *The General Organization of Production,* including the study of methods, stabilizing production and employment, standardization, elimination of waste, horizontal and vertical combinations, national and international industrial agreements, cartels, trusts, and syndicates, action by Government, by Public Services, and by employers' and workers' organizations, specialization, mass production and distribution, study of the general problems of the world distribution of raw materials, the organization of markets, transport, power, and labour supply.

This country is undoubtedly very much behindhand in the attention it is paying to this most important movement. For this there are many causes. Perhaps the most important lies in the very simple fact that we speak the same language as our cousins in the United States. When F. W. Taylor's work first came into prominence it led to a very violent reaction on the part of the American craft unions. Some of their resolutions on the subject make amusing reading. For instance, at the Thirty-third Annual Convention of the American Federation of Labour, held at Seattle, Washington, in 1913, a resolution was adopted urging "the desirability of the enactment of such legislation as is necessary to prevent the introduction of the inhuman and hideous so-called Taylor system of scientific management in the operation of workshops and factories under Government control. A more diabolical scheme for the reduction of the human being to the condition of a mere machine was never conceived by human brain. No tyrant, nor slave-driver in the ecstasy of his most delirious dream, ever thought to place upon abject slaves a condition more repugnant to commonly accepted notions of freedom of action or liberty of person than is comprehended by this Taylor system." Since that date, there has been a remarkable change of opinion in the labour world of the United States. Evidence of this may be found in the proceedings of a recent Convention on the elimination of waste, in which one Trade Union leader described, amid general approval, how his union had established a consultant service staffed by efficiency engineers. When any employer said that he was

unable to pay the wages which the Union demanded, they offered him the services of their own scientific management men to show how it could be done.

Unfortunately, the earlier fulminations against scientific management were very widely broadcast among the workers in this country. At the same time, the first attempt by employers to apply the principles of scientific management on a large scale took place in the period immediately after the Armistice. The Trade Union leaders, and especially those in craft unions, were at that time wholly preoccupied with the problem of obtaining the restoration of the conditions which had been allowed to lapse during the war-time emergency. As a consequence, they were particularly predisposed to be hostile to a system of organization which would have involved a complete reversal of many of the old practices in British industry. A system for which they were already disinclined industrially, owing to the reports from the United States, was also particularly awkward from the standpoint of their political aims at that particular period.

English people are notoriously conservative and difficult to move in the realm of ideas. When, in addition to this, the few employers who had become interested in scientific management were faced with the possibility of serious labour trouble if they persisted, it is hardly to be wondered at that Taylorism did not make very much advance in this country.

In one direction, however, Great Britain achieved very notable work. The Report of the Health of Munition Workers' Committee, presented in 1916, gave a great impetus to the study of industrial fatigue, and led to the foundation of the Industrial Fatigue Research Board. Dr. C. S. Myers, a member of this Board, realized, however, that a link was wanting. It was necessary not only to study the broad problems of different industries, but to show the individual employer how experimental psychology might be applied to the problem of each separate enterprise. The National Institute of Industrial Psychology, which was founded under Dr. Myers' direction, is doing work on the psycho-technical side of industry equal or superior to that of any other institute in the world. Altogether, there has been a remarkable development of work in this direction, and, on the whole, labour has co-operated willingly.

In this situation there is, however, a risk. As Mr. H. S. Dennison recently pointed out in lecturing to the Business Research Association, there is grave danger in any business enterprise unless the various functions of that enterprise are maintained in balance. It is far better to improve all the activities of your concern by 10 per cent. than to improve one or two activities by 100 per cent. Where costing, or planning, or psychology, or welfare, is developed to a very high degree of efficiency, while the other aspects of the management are not similarly modernized, it is generally found impossible to maintain the position even of the effective function over a period. It is hampered by weaknesses in other parts of the organization. It is just such a failure to appreciate the complexity of specialized operations necessary to the successful conduct of a business, and to provide equally

for all of them, that the analytical method, which is at the root of the conception of rationalization, is designed to prevent.

Other notable work in this country has been done by the British Engineering Standards Association. This is a foundation which has been in existence for a large number of years. But hitherto its activities, as suggested by its title, have been largely limited to achieving standard practices in various branches of the engineering industries. It cannot operate with either the extension or the authority of the Bureaux of Simplified Practice and of Standardization of the Department of Commerce in Washington. It is undeniable that much more can and should be done than is at present being achieved here. A glaring case was cited in the third volume of the Report of the Balfour Committee on Industry and Trade, from which it appeared that in one factory three hundred and fifty varieties of pit-tub wheels were being produced when, as a matter of fact, fifty varieties or fewer would serve all the needs of the whole coal industry.

While there are many individual works in this country which have adapted in whole or in part the general principles of rationalization in the conduct of their business, on the part of British manufacturers, there is undoubtedly urgent need for a wider study and a clearer understanding of what is implied in this movement. And, broadly speaking, it is not on the productive side, which tends to receive so much emphasis, that the biggest opportunities for improvement are to be found. In buying, in office management, and in distribution, there are incredible inefficiencies. In the writer's personal experience there is hardly a single well-known house in London which can be absolutely relied upon to deliver goods as ordered at the address and time specified without at least 3 to 7 per cent. of error.

The extraordinary part of this situation is its acceptance as normal by a large proportion of business people and consumers. The writer came across a factory which was quite calmly delivering goods of a standard type fourteen to twenty-eight days late to customers who had ordered three months in advance. The same goods were being sent simultaneously to customers who had ordered two or three days previously. *And no one seemed to think it really mattered.* The customers grumbled a bit; the factory staff shrugged their shoulders and said: "It was always like that in the rush season." Apparently a promise, given in the way of business, was a purely provisional affair. All that was necessary in that particular instance was a little closer planning on the basis of the admirable figures already provided. The consequence has been a marked improvement in that branch of the factory's business and considerable savings at the production end from working to a more definite programme. It is probably in relation to office work that the opportunities for this kind of saving present themselves most clearly. In one case the writer was able to effect a saving of £8,000 per annum in the cost of running three offices in one factory, merely by using more up-to-date machinery and methods. The sum saved was over 40 per cent. of the previous total cost of the operations concerned.

The point to be stressed is that there is nothing new or wonder-

ful about the actual methods employed. What is new is the attitude towards the problems of industrial management implied by the term rationalization. And that attitude is briefly the attitude of science: that there is no phenomenon without a cause; that such causes can be discovered, defined, and analysed; that on the factual basis so supplied it is possible to obtain a progressive solution of the evolving problems, more accurate, more enduring, and more satisfying to the community than our present regulation of these affairs.

If we endeavour to summarize in a single word the basic idea underlying the whole rationalization movement, that word would be "control." It is not a word which sounds pleasantly to English ears. But let us be clear about what is meant. When the enthusiast for rationalization speaks of control he does not imply the issue of arbitrary orders by individuals. We have had too much of that already in industrial life. What is meant is the detailed analysis and measured presentation of the facts in each and every set of circumstances . . . and the planning and organization of future common action in the light of those facts. That is not a method of tyranny, as opponents of scientific management have suggested. It is a step towards freedom. As Professor Laski once wrote: "Publicity secretes freedom in the degree of its own existence."

It is probably in this direction that we can do most in this country at the present juncture to make up the leeway we have lost, not only to the United States, but to many of our competitors in Europe. I am not a pessimist about national prospects. There are here and there about the country features of our industrial management in various factories, and in various functions in those factories, which compare with the best to be found anywhere in the world. But they are uneven and unco-ordinated. The business which is strong in one direction is weak in others. There seem to be few businesses and fewer industries in which the idea of a balanced and controlled structure, strong in all its functions and hourly alert for improvement, has really taken hold of those in command.

Our business leaders can solve our business problems, not excluding the problem of unemployment. But they can only solve them co-operatively by working together in the spirit of science. We hear a great deal of "business secrets." Much of it is balderdash. There are certain technical processes which cannot be patented, and which, so long as competition exists in the world, are perhaps best confined to certain persons. But 90 per cent. of the so-called "secrets" in business are merely ordinary methods of solving the administrative problems common to most economic enterprises. They are no more secret than the Eiffel Tower. The extent to which "hush hush" is practised over issues which do not merit it is a sign of the extent to which business is still in the ju-ju or animistic stage of thinking.

I have emphasized "those in command" and "our business leaders" because if one thing is clear above all others it is that the impetus should come from them. Many of the failures in the early stages of the Scientific Management movement in America

were due to an insufficient appreciation of this factor. Mr. R. F. Hoxie, in a report written from the Labour angle, was forced to insist that "Scientific Management must begin at the top." It is sheer lunacy to introduce time and motion study or other of the Taylor devices affecting the operative worker until the management, organization, and planning of the enterprise as a whole has been placed upon a sound and logical basis.

The first task before English business leaders to-day is to set to work to relearn the art of management. They have to get rid of the personal, individualistic note which is so prominent in the typical "captain of industry." They have to restudy the basic principles of administration scientifically. Above all, they have to learn from each other, by a wider exchange of experience and a closer investigation of the best practices in each individual concern—which is only to say that they have to learn the finest feature of true scientific work, personal humility in the search for objective knowledge.

There are, of course, other factors which could and should help. There are a large number of voluntary and governmental organizations in Great Britain, notably many professional institutions, which have at their command much knowledge which can be of vital service to industry. It is their duty to work co-operatively, especially on the problem of the presentation of their information and services to the individual employer. He is often a small man. He cannot possibly belong to forty or more institutions and read a round dozen of journals, though he might often do more than he does.

The Department of Commerce at Washington seems, in its Bureaux of Standardization and Simplification, to have established almost a new technique of governmental initiative in relation to industry. We have to rid our minds of ancient prejudices on this subject. The scale and scope of modern economic processes do present problems which cannot satisfactorily be handled by any individual or combination of individuals. The machinery of the State does seem to provide an opportunity for disinterested initiative which, without compulsion, can set the necessary combinations of forces in motion. We want more experiment along these lines and less rubbish about the inefficiency of the public services. Their problems are problems of size, and many Departments of State are models of economical operation when compared with certain of our great businesses.

Last, but not least, we want more and better co-ordinated statistics. It is to be hoped that the Census of Production which is in course of publication will not again be allowed to lapse into its decennial resurrection about three years after the events recorded. We need prompter and more effective figures if we are to know the facts about our industrial health in time to take action on them. It is necessary to stress these immediate and practical steps which are nationally desirable because our need is urgent.

But it cannot be too often repeated that "Rationalization" is something more than any specific measure or device. It is wider even than national interests. It involves a new attitude, a change of heart, on the part of all engaged in economic activity. For,

indeed, at long last, it is the application to the economic field of the great hope which has inspired the scientific workers through all ages. It is a claim that in this sphere, as in others, man is not the plaything of blind forces, working either within or without his own nature. It is an assertion that the world-wide complexity of effort on which his material requirements depend can indeed be analysed, defined, and ultimately controlled, so that the vast resources which modern science has placed within his grasp may be utilized to the maximum benefit of the world community.

More immediately to the nations who can grasp and apply the full significance of its suggestions it means many things. That they will achieve a material prosperity at present scarcely imagined is unquestionable. It is likely that the old economic shibboleths of the nineteenth century, with their parochial view of competition and their subfusc individualism, will come to seem to them as crazy as witch burning does to us. They may achieve a view of industry as a dynamic co-operative process as interesting as great art and as romantic as exploration. They may even discover that they are in business for their health.

The following took part in the discussion on Major Urwick's paper:—Mr. E. T. Elbourne, A.M.I.Mech.E.; Mr. J. G. Pearce, B.Sc., M.I.E.E.; Mr. A. Zaiman, B.A., F.S.S.; Mr. F. W. Tattersall; Dr. P. Sargant Florence; Dr. R. S. Hutton; and Mr. A. S. Fitzpatrick, M.Sc., D.I.C.

STATISTICAL ANALYSES IN THE ENGINEERING INDUSTRY FOR USE IN THE FORMATION OF A SALES POLICY.

By S. J. NIGHTINGALE and Miss A. L. BENNIE
(Research Department, Metropolitan-Vickers Electrical Co., Ltd.).

In at least three papers presented at past conferences of this Association the advantages accruing to industry and business from any statistical analyses leading to quantitative knowledge of market values were most adequately pointed out The need for such analyses being nowadays quite unanimously accepted, it occurred to us that nowhere could be found any thesis treating of a practical technique of market estimation. That some technique exists there can be no doubt when so much of this work, covering so vast a field of industrial and business activity, is being done. The truth probably is that there exist as many techniques as there are investigators. In view of this, we considered that it might be in every way beneficial to make some gesture provocative of discussion on this aspect of the subject, and it is in this spirit that our paper is tentatively submitted.

It is necessary to make one or two observations on the method illustrated in the appended analysis. For the sake of brevity and clarity, it has been reduced to a form that omits many important factors which, in a full analysis, would enter into consideration.

They have been neglected because, while they may affect the result, they do not alter the method.

The first question that might be raised is: Why not go at once to an analysis of export and import returns instead of using these only as a final check? The answer is, in the first place, in practice we should undoubtedly do this, and in the second place that consideration of the export and import returns involves many difficulties and a few errors not met with when the investigation is based on returns from municipal electrical authorities. We were called upon early in 1926 to estimate the market for electrical machinery in a territory we have chosen to call "T" up to the end of 1927. Of official statistics, the Annual Statement of Trade issued in November, 1925, giving returns for the year 1924, was at that time the latest information available. These returns were of course used, but an alternative method was sought; a method, if the truth must be told, whereby we could roughly forecast what the official returns for 1925 and 1926 would be when issued respectively six months and eighteen months later. These are reasons why analyses based on export and import returns are not all that could be desired; such delays may be unavoidable, but together with that agonizing miscellany "not elsewhere specified," they sometimes become the despair of the industrial economist or statistician.

Another basis for computation was sought and found in a study of power station economics, from which it was borne in upon us that in the capacity relations (expressed in power units) between consuming and generating plant on a system lay factors which defined the potential markets for electrical apparatus. There is nothing new in these factors; indeed, they are used every day by engineers; only the application of these well-known factors to market estimation may be considered somewhat novel. Whether these factors could be of real use or not depended upon whether returns from municipal electrical undertakings were more or less readily available than export and import returns. We found them to be more readily available and more up-to-date. Thus it was that by using the rate of growth of installed generating capacity in any territory as a basis, estimates quite reasonably accurate could be made. Sometimes, as in this case, additional help was gained from returns giving consuming power installed in industry. The example appended typifies the method, but covers only a restricted field of apparatus. Where engineers are concerned, it has one definite advantage; it renders an estimate first in terms of power units, satisfying at once design and sales engineers who appreciate magnitude first in terms of these units and only afterwards in sterling.

We are qualified to treat the subject only in so far as it concerns our own small branch of the engineering industry and submit what follows in the hope that others may find in it some little that is of interest. Other investigators in widely divergent fields of industry and trade doubtless use crutches somewhat like our "diversity factor" which help the digits to hobble, however lamely, in the general direction of a quantitative estimate of the potential markets for their products.

A Partial Estimate of the Value of the Potential Market for Heavy Electrical Machinery* in the Territory "T" for the Year 1927.

The market for electrical machinery in this or any other territory includes :—

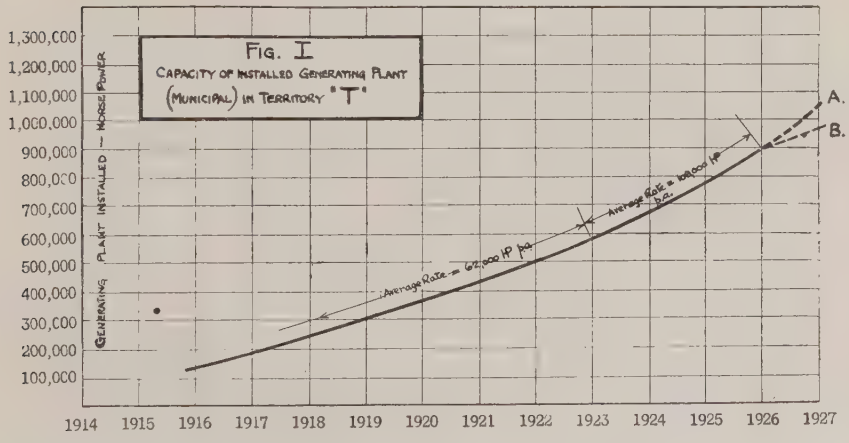
(i) The machinery for generating electricity;

(ii) The machinery for using it.

Case I.—In dealing with (i) and (ii) we shall assume first that the whole of the power consumed in industry is supplied by municipal generating stations. This enables a minimum potential market to be computed.

Case II.—We assume, secondly, that all the energy consumed in industry (ii) is generated by the industry itself, none being supplied by municipal power stations. This gives an additional market which, taken in conjunction with Case I, gives a maximum potential market.

Case I (i).—Fig. 1 shows the growth of the installed generating capacity in municipal stations in territory "T" over the last twelve years. The last actual return is made for the year ending December, 1926, and our estimate requires a figure to the year ending 1927. Extrapolation of this curve to the end of 1927 is a matter of simplicity involving no very great source of error. The fact that the points fall on an upward tending curve and not merely on an upward tending straight line shows a steadily in-



creasing market. The average annual increments prior to December, 1923, and over the period December, 1923, to December, 1926, are 62,000 h.p. per annum and 108,000 h.p. per annum respectively. If the curve be extrapolated to the end of 1927, (A) at its latest established rate and (B) at its pre-1923 rate of 62,000 h.p. per annum, the following postulates are incurred :—

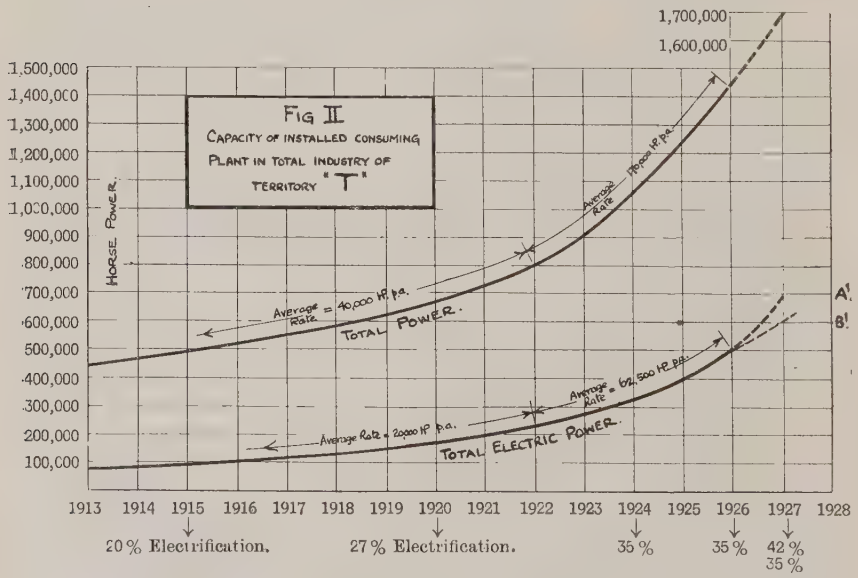
* In this analysis electrical machinery is taken to mean generating plant (including prime movers), transformers, and industrial motors.

(*a*) That the market will advance at its present established rate, which is higher than either pre- or post-1923 rates and equal to about 130,000 h.p. per annum;

(*b*) That the market will advance at a rate below its latest established rate, but equal to the average over the period 1916-1923.

On the showing of the curve alone, the point (A) represents an estimate somewhat optimistic, while the point (B) is definitely pessimistic. A consideration of the financial state of affairs in the territory must help determine which of these estimates is most accurate, or whether a mean point will state the case most adequately. There is another guide to the determination of this estimate arising out of the fact that the greatest demand for power in this territory comes from industry. If now we examine the industry's demand for power (Fig. 11, upper curve) we find over the last four years for which returns are available (1922-1926) a rate of increase in the demand for power *greater* than that shown by Fig. I in the supply of power (the increment in power supply 1925-1926 was 125,000 h.p.; industry's demand for the same period was 200,000 h.p.).

Considering now the lower curve in Fig. II, representing the growth of industrial demand for electric power, it is seen that the electric power curve shows, on the whole, a greater upward tendency than the total power curve, indicating that, of the power demanded by industry, a gradually increasing proportion is electric. If on this basis the two curves are compared, 1915 shows



a 20 per cent. electrification, 1920 a 27 per cent. electrification, and 1926 a 35 per cent. electrification.

From considerations of the total power curve, its rapid upward tendency would seem to justify an optimistic extrapolation

of Fig. I. On the other hand, on the basis of electric power, it is shown that the electrification is the same in 1926 as in 1924, indicating an arrest in industrial electrical development which may or may not be temporary; no such arrest being observable in the total power development.

While this is considered insufficient to countenance extrapolation of Fig. I to the pessimistic point (B), other conditions neglected, it may be sufficient to shake confidence in the optimistic point (A). If no financial or political grounds exist to divert this opinion, it is justifiable to assume that a mean point between (A) and (B) represents most accurately the increment for the year 1926-1927. Such a point gives the potential market for generating plant for 1926-1927 as being 100,000 h.p.

We have laboured the extrapolation of Fig. I perhaps more than seems warrantable, but it is the foundation factor upon which subsequent estimates of all consuming apparatus is to be built; as will be seen, any error here will be multiplied many times by the subsequent processes.

Case I (ii).—The next step we wish to emphasize, as being indicative of the use of factors proportional to the market for consuming apparatus. It so happens that distributing and consuming plant bear to the installed generating plant certain fairly definite ratios when expressed in terms of power units. This is obvious when it is borne in mind that there must be a limit to the capacity of consuming apparatus connected to any one system. Considering distribution plant first, it is necessary to distribute all the energy generated to the consumers' premises, and it is economic to do this at pressures (voltages) beyond those at which the energy is generated. Again, within the consumers' premises or reasonably close thereto, it is necessary again to transform the energy from the transmitted to the consumers' pressure.

The apparatus which conveniently enables this to be achieved is called the transformer. In practice, in most modern systems one transformer is placed at the generating end to step up the voltage for transmission, and another at the consuming end to step down the voltage to that required by consumers' apparatus. As these transformers must handle the whole of the energy generated, it becomes obvious that for every horse-power of generating capacity there must be provided at least 2 h.p. of transformers.

It so happens also that motors in consumers' premises may be installed—are, in fact, installed—having an aggregate horse-power greater than that installed in the generating station. This is possible, because all motors on a system are never on full load at one time. The ratio between the motor capacity on a system and its generating capacity is known as the diversity factor, and it may vary from 0.5 in rural to 1.7 in densely industrial areas. A good average which allows for a programme of industrial expansion is 1.3. We can say, therefore, that for every horse-power of generating plant installed, 1.3 h.p. of motors is, in general, required.

These factors for the proportion of transformers and motors

to the generators installed enable the potential market to be calculated once the annual increment in installed generating capacity is known.

Taking the estimated increment in installed capacity 1926-1927 from Fig. I, we can now say :—

Generating Plant (including Prime Movers)...	100,000 h.p.
Consequent Transformer Market (2 × 100,000)	200,000 h.p.*
Consequent Motor Market (1.3 × 100,000) ...	130,000 h.p.

The values per horse-power of this apparatus are, of course, well known, so that the value of the markets may now be expressed :—

Generating Plant	£310,000
Transformers	160,000
Motors	720,000
	£1,190,000
	Say £1,200,000 per annum.

The above figure represents the minimum potential market assuming that all industrial power is taken from municipal stations.

Case II.—The second case assumes that all power used in industry is generated by industry itself; the additional market thus manifest will, in conjunction with the results yielded by Case I, give a maximum potential market.

Referring again to Fig II, we have rather more guidance for extrapolation than before. As was pointed out in Case I, there was a temporary arrest in the rate of electrification, which was constant at 35 per cent. from 1924. The pessimistic view is to assume that this arrest in electrification will continue until the end of 1927, which gives us the point B^1. The optimistic view is that the curve will sweep up at its present established rate and give us the point A^1. Such an extrapolation gives us for the point A^1 an electrification at the end of 1927 of 42 per cent. This we consider over-optimistic, as it means an increase from 35 per cent. to 42 per cent. in one year, and that after the electrification has remained constant for the previous two years. Taking the conservative view again, a point midway between A^1 and B^1 should be a reasonably accurate figure. If this be taken, then we have to provide an additional 150,000 h.p. in industrial motors by the end of 1927. Since we are assuming that industry generates its own power, this figure will be equal to 1.3 × (the generating capacity required), and we have, therefore, an additional market of :—

Generating Plant	115,000 h.p.
Motors	150,000 h.p.

Since energy is generated on the premises, transformers will not be required to the same extent and we shall assume the limiting case where no transformers are used.

* It is unusual and a little incongruous to rate transformers in terms of horse-power, but the unit is used here for the sake of simplicity.

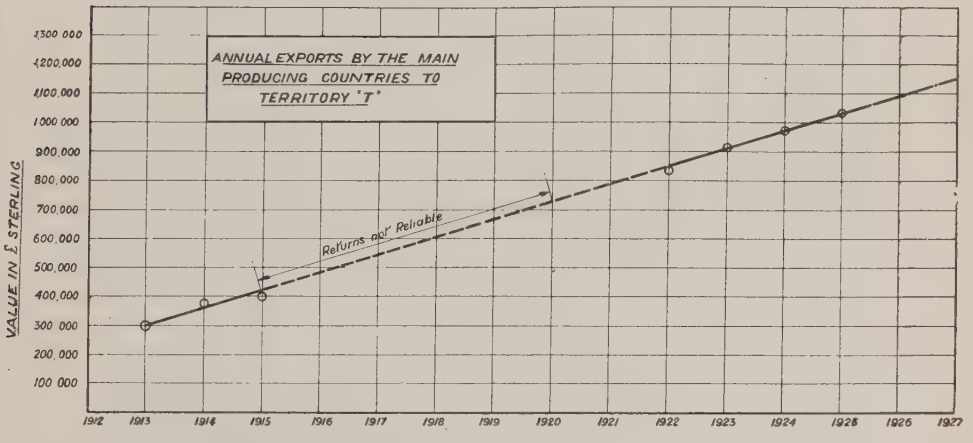
In value this additional market becomes :—

Generators	...	...	...	£460,000 per annum.
Motors	...	...	...	£850,000 per annum.
				£1,310,000 per annum.

The minimum market is estimated in Case I as £1,200,000; the possible additional market is estimated in Case II as £1,300,000; giving a maximum potential market of £2,500,000. The mean value of the maximum and minimum gives the potential market as £1,850,000 per annum, of which transformers will be £160,000 and motors £1,150,000, leaving the generating plant at £490,000.

The home manufacture of the territory can be estimated from considerations of exports and imports of the territory. In this case it is known to be about £500,000 per annum, leaving an open market for the territory of £1,300,000.

The examination of imports into the territory of electrical machinery as defined above should give some check to this calculation. The annual exports of all producing countries to the territory are plotted in Fig. III. The last official return being for 1925, when the value of electrical machinery going into the country reached £1,033,000, a very rough extrapolation to 1927 gives a figure for the export market of £1,140,000, which checks reasonably well with our calculated value.



It remains only to give from the export returns by countries in Table I the participation in the market by competing countries to yield very valuable information to a sales organization. This information is summarized below :—

(1) From considerations of the generating capacity installed in municipal stations in territory "T" and the power required by the industry of the territory, the value of the potential market for generating plant, transformers, and motors is found to be approximately £1,850,000 per annum, of which generating plant accounts for £490,000, motors for £1,150,000, and transformers for £160,000. In power units generating plant is 157,000 h.p., transformers 200,000 h.p., and motors 205,000 h.p.

The home production accounts for about £500,000 per annum, leaving an open market of £1,300,000.

(2) Some idea of foreign competition can be gained from the participation shown in the following Table :—

TOTAL ANNUAL EXPORTS OF GENERATORS, MOTORS, AND TRANSFORMERS TO TERRITORY "T."

(In £ Sterling.)

Exporting Country	1913	%	1923	%	1924	%	1925	%
United Kingdom	206,150	69	588,341	64	700,390	72	718,034	70
United Kingdom (not specified)	—	—	108,000	12	77,000	8	52,000	5
U.S.A.... ...	88,290	30	163,368	18	163,000	16.7	153,000	15
Italy	—	—	3,634	0.5	1,410	0.15	4,228	0.4
Sweden ...	—	—	32,150	3.0	24,000	2.25	66,600	6.0
Holland ...	—	—	—	—	9,430	0.9	12,800	1.1
Switzerland ...	—	—	—	—	—	—	26,200	2.5
TOTAL ...	300,000		908,000		977,000		1,032,862	

In 1925 Great Britain had a monopoly of 70 per cent. of the market, the only serious competitor being the United States with 18 per cent. On this basis the United Kingdom can expect a market value in 1927 of about £900,000.

(3) The participation of our own Company in this market may also be estimated with fair accuracy. It is known, for instance, that about five firms in the United Kingdom contribute to the export business in heavy electrical machinery. Consideration of the capital employed in these firms compared with the capital employed in our own organization gives some basis for estimating the approximate extent of the participation of our British competitors. Our own business in this territory is known accurately and it is a very simple matter to say whether we are getting more or less than our share either in the whole market or any part of it.

(4) The market should continue for some years steadily to rise as the demand for power by local industry is rising rapidly. The demand for electric power is rising at a greater rate than the total power demand, there being no sign of power saturation. The bases for the statement are :—

> On the whole, industry shows an electrification of 35 per cent., which, though higher than is general in British industry, is still far below the highly electrified industry of the United States and Switzerland. No sign of saturation should be visible until an electrification of upwards of 65 per cent. is attained. The electric power consumption per worker in the industry of territory "T" is less than half that of the United States. Therefore the industry in territory "T" at present stands at about half its ultimate electrification.

From these considerations the market in the next few years should never be less than the estimates given herein; it is much more likely that it will advance at a somewhat higher rate.

From quantitative considerations, therefore, the overseas representative enters the field with a fairly accurate knowledge of the market conditions. No attempt is made to suggest to the sales organization the qualitative requirements of the market; the determination of these is the business of the man on the spot.

The following took part in the discussion following the paper presented by Mr. Nightingale and Miss Bennie:—Mr. W. Hubball, M.Sc. (Tech.), A.I.C.; Mr. F. Hall, B.Sc. (Econ.); Mr. J. G. Pritchard; Miss K. M. Dowding; Mr. W. L. Hill, A.I.P.A.; Mr. R. S. Spicer; Mr. G. F. Schwartz; and Mr. A. Zaiman, B.A., F.S.S.

COTTON STATISTICS: THEIR RELATION TO MARKETING AND MARKET ESTIMATING.

By FREDERICK W. TATTERSALL.

The world cotton industry has the advantage of a mass of statistical information, and it is doubtful whether any other trade is so well supplied in this respect. It is significant that during the last year or two criticism has been made that too many figures are published, and owing to representations a reduced number of reports in one particular branch has been decided upon. The majority of the people affected, however, find the statistics of great value in estimating the course of prices and the trend of trade.

In dealing with this subject it is desirable to begin with the raw material, and in this connexion the American cotton crop is pre-eminent. To spinners, manufacturers, merchants, and all who are connected with the industry the importance of accurate information relating to supplies of raw cotton cannot be overestimated. For many years the United States Government has built up a most valuable organization for the purpose of ascertaining facts relating to the cotton crop. During the early seventies there developed a demand on the part of producers of cotton for dependable statistics showing the condition of the cotton plants from the time of planting to the harvesting of the crop. These statistics were first limited to estimates of planted acreages in the Spring and the condition of the crop from time to time during the growing season. Although it was recognized that acreage and condition reports were desirable and useful, there was much dissatisfaction on the part of those interested because of uncertainty as to what these condition figures meant in terms of ginned bales. A demand therefore arose that the Government should translate its condition figures into terms of bales. In 1915, therefore, the Department of Agriculture published its first series of bale production forecasts.

In 1923 it became compulsory for the Department to issue its cotton crop reports fortnightly during the growing season instead of monthly, as had been the case since 1915. The system

of the Department in obtaining data with regard to the crop is most extensive. In each State there is an agricultural statistician with a corps of skilled assistants. As an indication of the organization available it may be pointed out there are 700 county reporters, each maintaining his own correspondents and reporting for the area contained in his county; 7,000 township reporters, each reporting for a township; 5,000 special cotton reporters, each reporting for his locality; 12,000 individual farm reporters, each reporting for his own farm; and 20,000 cotton ginners, each reporting for the area covered by his gin. Hundreds of thousands of questionnaires are mailed periodically throughout the year, more particularly throughout the growing season, to the tens of thousands of voluntary correspondents previously mentioned. By sending out such a large number of questionnaires many of the errors incident to smaller samples are either entirely eliminated or substantially minimized. While some groups of correspondents are inclined to under-estimate, another group may do the opposite. These errors of judgment, either unintentional or deliberate, are known as bias. From the vast amount of statistical information now available it has been possible to measure this bias quite accurately for each group under different circumstances.

During the last three or four seasons the Department of Agriculture has issued an acreage estimate about July 1, which has been revised in December. Between those months twelve fortnightly condition reports and estimates of the yield have been published. In certain trading circles, however, it has been felt that these statements have been issued too frequently, and last year, at a meeting of the Committee of the International Federation of Master Cotton Spinners' and Manufacturers' Associations, it was decided to urge upon the Department of Agriculture that the fortnightly crop condition reports be discontinued. It was pointed out that for about three or four days before and also for the same period after the issue of the reports there was stagnation of business. The opinion was expressed that these fortnightly reports had proved a great impediment to trade. In consequence of the representations put forward the Government decided that in the season 1927-28 there should be five reports relating to the state of the crop, at the beginning of August, September, October, November, and December, and that at the beginning of July there should be a statement showing the cotton acreage, with supplementary reports on September 1 and December 1 on the acreage abandoned. This change in the schedule will not affect the ginning returns, which will continue to be published fortnightly.

During the growing season of the American crop the markets of the world are flooded with reports and statistics from private firms, but many of these are not without prejudice, and even when allowance is made for mistakes by the Government officials the statistics from Washington are the most reliable obtainable. To the average person the difficulty of forecasting the area under cultivation and the probable yield of a crop which covers anything from 40,000,000 to 50,000,000 acres is not always realized. It is possible for the output to vary from 10,000,000 to 19,000,000

bales, and the weather conditions in the belt during July and August may affect the ultimate yield to the extent of millions of bales. Considering the difficulties which have to be contended with, the American Government officials can be congratulated upon the relative accuracy of the information supplied to the world.

The next most important cotton crop is that grown in Egypt, and the statistics are not anything like so adequate as those relating to American cotton. The present system dates from the creation of the Ministry of Agriculture in 1911. Monthly reports are published during the growing season, estimates of production being made in September, October, and November, the acreage forecast being issued in August. The area estimate is compiled from reports from the District Tax Collectors, but great difficulty is experienced in securing reliable information. The production estimates are prepared at meetings of the officials of the Department on replies from inquiries in the districts. One factor in connexion with the Egyptian crop is that, compared with conditions in America, there are no violent seasonal fluctuations of climate, and the water supply is invariably adequate, but it is not an easy matter to estimate the damage to the plants by the pink boll-worm. Users of Egyptian cotton are not satisfied with the present system, and this important question was very thoroughly discussed at the Congress of the International Cotton Federation, which was held in Egypt at the beginning of this year. It was then suggested that the Ministry of Agriculture should send an important official to Washington in order to become acquainted with the statistical method in operation there.

The cotton crop in India is also important, and the Government publishes periodical reports relating to the acreage and the probable production. There is plenty of room for improvement, however, in the system at present in force, and now and again there are many complaints of the figures being unreliable. Owing to the constant criticism attempts are now being made to place the arrangements on a sounder basis, and it is believed that in the near future the statistics will give greater satisfaction.

Quite apart from the figures relating to supplies of cotton valuable statistics are issued daily and weekly by the Cotton Associations at Liverpool, New York, and New Orleans. The weekly circular of the Liverpool Cotton Association contains extensive information. In addition to the prices ruling, particulars are given of imports, exports, spot sales, deliveries to spinners, stocks, and visible supply. If it were not for these weekly figures from Liverpool, traders would be at a decided disadvantage.

All connected with the cotton industry are in the debt of the International Federation of Master Cotton Spinners' and Manufacturers' Associations. This organization has been in existence since 1904, and, except for the years during the European War, half-yearly returns have been issued, showing the consumption of raw cotton in all the countries of the world, stocks at the mills, together with the number of spindles in all countries. Under this organization important congresses have taken place, when matters of supreme interest to the industry have been discussed.

The question arises as to the value of these extensive statistics to spinners and manufacturers and traders generally. Doubt is sometimes expressed as to whether the majority of traders take sufficient interest in the figures published, or are prepared to study them sufficiently to arrive at correct conclusions with regard to the course of prices and probable trade developments. To some extent the public is confused by the amount of statistical matter available, and many people who are actively engaged in dealing with the routine affairs of daily commerce welcome summaries which are issued from time to time by private authorities and the press.

It is doubtful whether the statistics at present available relating to raw cotton supplies and consumption could be improved to any material extent. It has been suggested, however, that it would be an advantage to have regular returns with regard to the production of cotton yarn and cloth, and in this respect England is behind the United States. For the most part in this country we have to rely upon the figures which are issued only occasionally through the Census of Production, and as a rule the information is so belated that it is of little use to traders. On this point it may be said that the English Federation of Master Cotton Spinners' Associations obtains weekly returns from their members as to production, sales, and deliveries of yarn. An analysis of these returns is sent to the members, but the figures are not made public. Similar statistics have also been recently secured by the Cotton Yarn Association, an organization of spinners which has only been in existence a few months. Other countries, such as the United States, India, and Japan, issue statements regularly, giving the output of yarn and piece goods, and in view of the fact that the industry in England is very thoroughly organized it would not be much trouble to prepare similar returns. Possibly some day the International Cotton Federation will compile statistics of yarn output in all the countries of the world.

Speculation or gambling in any commodity is very undesirable and should be deprecated on every possible occasion. There is no probability, however, of the entire elimination of speculative operations in the cotton futures markets of the world. Except on rare occasions, however, gambling does not take place on a large scale. It is the opinion of the writer that during the last three seasons, during which the American Government published fortnightly reports on the crop, there was less speculation than previously, and on the whole the frequent official statements have helped to promote steady prices.

Whatever may be the views held on the question of speculation, at some period in trade negotiations it is necessary for one party or another to take a risk. A spinner of yarn knows that he will require a certain amount of raw cotton during, say, the next six months, and it is absolutely necessary for him to decide as to whether it is advisable to commit himself for that period or to adopt a policy of purchasing from hand to mouth. Towards the close of each Summer the position of cotton supplies can be gauged fairly accurately, and as a rule traders can make up their minds as to the general prospects. Important changes in the

situation sometimes occur unexpectedly, and even in the Autumn it is possible for the growth in the States to improve, whilst in the closing months of the year there may be a distinct alteration in the extent of consumption. All these factors have their influence upon values. Manufacturers of cotton cloth have also to face the problem of the probable course of prices for yarn, which is their raw material. It may be said, however, that the price of twist and weft is not always dependent upon raw cotton values. Then, again, dealers in piece goods have to place orders with producers many months ahead in order to obtain the necessary deliveries and allow time for finishing processes. Trade of this character cannot be carried on without running some risk.

It will be gathered from the previous remarks that the writer is of opinion that traders must be prepared to take a view of the market on certain occasions. A policy of this kind cannot be described as speculation, as no person can be in business without being prepared to take risks. So far as the cotton industry is concerned traders have the advantage of most valuable statistics which are published almost from day to day, and although information of this kind may not always be a true guide, an intelligent study of the facts available should be a means of preventing serious mistakes on the part of producers and distributors of cotton goods.

The following participated in the discussion following Mr. Tattersall's paper:—Mr. A. Zaiman, B.A., F.S.S.; Mr. S. J. Nightingale; Mr. G. F. Schwartz; Mr. A. E. Overton, M.C.; and Mr. R. S. Spicer.

TRADE INFORMATION AND STATISTICS IN GREAT BRITAIN AS COMPARED WITH OTHER COUNTRIES.

By A. E. OVERTON, M.C. (Principal, Board of Trade).

INTRODUCTORY.

The title of this paper is drawn in general terms, and it is intended to discuss only some of the activities which may be regarded as falling within it. Statistics relating to particular industries will be left on one side, and this paper will be concerned with statistics relating to trade and industry generally. In the field of these statistics there are two distinct, though closely related, branches of Government activity; first, the actual compilation of statistics by Government Departments; and, secondly, the dissemination by Government Departments of commercial intelligence, including trade statistics compiled by Governments of other countries. I shall confine myself to the first of these activities, which includes statistics of external trade and statistics of industrial production.

Before entering on the main subject, it may be useful to mention some of the leading publications of the Board of Trade and of the League of Nations giving summary statistics of industry and trade.

"The Statistical Abstract for the United Kingdom" contains summaries of the more important Government statistics published in this country, including trade statistics, over a period of fifteen years. The last issue relates to the years 1911 to 1925.

"The Statistical Abstract for the several British Overseas Dominions and Protectorates" contains statistics showing the progress, primarily from the aspect of production and commerce, of the overseas countries of the Empire. The last issue covers the years 1909 to 1923, and the next issue covering two later years is in course of preparation.

"Accounts relating to the Trade and Commerce of certain Foreign Countries and British Countries Overseas" are published quarterly, and contain summaries of the latest figures of the trade of the more important countries of the world.

In the "Board of Trade Journal," published weekly, there appear from time to time general articles about our trade, such as those dealing with comparisons of its volume and value (published quarterly) and those dealing with the balance of trade, *i.e.* with invisible as well as visible trade (published at the beginning of each year). It is in this Journal that the Preliminary Reports on the 1924 Census of Production are being published.

Among the publications of the League of Nations perhaps the most useful for purposes of general reference is the "Monthly Bulletin of Statistics," which contains summary statistics relating to the industry, commerce, finance, &c., of the principal countries of the world. Other useful recent publications of the

League relating to industry and trade include the "Memorandum on Balance of Payments and Foreign Trade Balances, 1911-1925," the "International Statistical Year-Book, 1926," and the "Memorandum on Production and Trade" prepared for the International Economic Conference held this spring.

STATISTICS OF EXTERNAL TRADE.

For this country statistics of the real values of imports are available from 1854, and of exports from as far back as 1798. Before these dates the statistics related only to "official" values fixed at the end of the seventeenth century; and it will be obvious that prices ascertained at so early a date, however accurately those prices may have been fixed originally, afford but a poor basis for estimating changes in trade in the nineteenth century.

As regards countries of provenance of imports and of destination of exports, the British statistics since the year 1904 show the countries from or to which the goods are consigned. Prior to this date the particulars related only to countries from or to which the goods were shipped (*i.e.* no trade was recorded with inland countries such as Switzerland), while both sets of particulars were published for the years 1904 to 1913. On these and other points, the practice in other countries varies considerably, and those interested are referred for details to Volume II of the "Memorandum on Balance of Payments and Foreign Trade Balances, 1911 to 1925," published by the League of Nations, and, for further details in respect of certain countries, to "A Tabular Guide to the Foreign Trade Statistics of Twenty-one Principal Countries," compiled for the London and Cambridge Economic Service by Mr. Frederick Brown. It may be mentioned that the general tendency is to move away from "official" values, useful as these are for Customs purposes, towards real or declared values, and from countries of shipment, which are the easiest to ascertain, towards countries of origin or of ultimate destination.

The British trade statistics comprise three sets of figures, firstly total imports, secondly exports of goods the produce or manufacture of the United Kingdom, and thirdly exports of imported merchandise usually called re-exports. Imports for internal use, comparable with "special" imports, are obtained by deducting re-exports from total imports. For making international comparisons the best figures to use are those of "special" trade—*i.e.* imports for domestic use and exports of domestic products. The reason is that, while particulars of the special trade of most countries can be ascertained on a fairly comparable basis, some countries do not publish figures of "general" trade and, even among those countries that do, different kinds of trade are covered by this term; "general" trade may include all or some of the following kinds of trade usually excluded from "special" trade: goods imported into bonded or other stores and subsequently re-exported, transit trade, and transhipment trade.

The number of the various descriptions of goods for which provision is made in the United Kingdom Returns was very largely increased in 1920, and now runs to some 1,600 headings. There are some 170 countries to be provided for, of which about

sixty are within the British Empire. A Joint Committee of representatives of the Board of Trade and the Customs meets annually to consider proposals for alterations in the headings to be made in the ensuing year and in the particulars to be shown in the published Returns; but the changes so made are not, as a rule, of any considerable magnitude.

It would obviously be an immense undertaking to publish at monthly or even at annual intervals full details (quantities and values) of the imports, exports, and re-exports of some 1,600 separate descriptions of goods, giving for each description particulars for all these countries. This leads me to the main part of this subject, which is to describe what selected information is, in fact, built up from the records and published in the Trade Returns, and in certain respects to compare these Trade Returns with those of the other principal countries. Before passing to this, I want to make it clear that information in the full detail is available at the Customs, and that it is open to any interested party to obtain from the Statistical Office of the Customs, 28 Endell Street, W.C.2, on payment of the appropriate fee (calculated to cover the cost of the clerical labour involved), complete monthly, quarterly, or annual figures of the imports or exports by countries of any particular description of goods included in the statistical nomenclature. Very considerable use is made of these facilities by traders and manufacturers, as is shown by the fact that the fees, &c., collected by the Customs amount to about £14,000 a year.

I come now to the published Trade Returns of the United Kingdom, and to compare them with the Trade Returns of the more important countries of the world. There are two publications, the "Accounts relating to the Trade and Navigation of the United Kingdom," published monthly, and the "Annual Statement of the Trade of the United Kingdom," published annually in four volumes. Annual Returns relating to shipping are published in the "Annual Statement of the Navigation and Shipping of the United Kingdom."

Monthly Trade Returns.

In this country overseas trade forms a greater proportion of the national turnover than in other countries of the world, and it follows that prompt and regular statements of the value of our overseas trade are of relatively high importance in indicating the conditions and progress of industry and trade. In respect of the monthly "Accounts," therefore, the first consideration is to publish the available figures at the earliest possible date. These Accounts are, in fact, published on the tenth working day of the month following that to which the figures relate, and, bearing in mind the enormous turnover of our overseas trade amounting to some £160,000,000 to £170,000,000 a month, I think you will agree that this is no mean achievement. Switzerland, the Netherlands, and Sweden are the only other countries of importance which publish their corresponding returns with anything like the same degree of promptitude (about a fortnight after the end of the month), but the volume of their trade is, of course, of con-

siderably smaller dimensions than ours. The United States, Germany, Belgium, and several other countries publish their statistics about a month after the end of the month to which the figures relate; while France and Italy, among important European countries, take even longer.

If it is granted that the first necessity is to publish the figures as promptly as possible, it follows that the degree of detail which can be presented in the published Returns must be strictly limited, and that the aim must be to present in summary form within a certain space the leading features of our trade, in regard both to the descriptions of goods traded in and to the countries with which the trade is carried on. Except in the case of trades of outstanding importance, it would be impossible within the available space to give many details of interest primarily to the particular trades concerned; and the fact that traders and manufacturers can obtain the full detail provided for in the statistical nomenclature from the Customs Statistical Office makes it unnecessary to load the Monthly Accounts with them. The Monthly Accounts therefore contain neither full details of the total trade in each of the 1,600 items for which provision is made in the statistical nomenclature nor full details of trade with individual countries, but are a sort of patchwork of these two systems, containing particulars of the trade in the more important descriptions of goods (often combined in one group), while for many leading items particulars are given of the more important countries of consignment. Another method of treatment is perhaps best illustrated by a particular example. Total exports of boots and shoes of leather are shown separately in respect of (1) men's, (2) women's, and (3) children's boots and shoes, while exports of all these descriptions of boots and shoes together are shown in respect of a dozen countries or groups of countries. In addition, once a quarter in the April, July, &c., issues, special tables are added, showing the total value of the imports, exports, and re-exports from or to each country.

The following statement compares the degree of detail given in respect of the individual items and of countries in the Monthly Trade Returns of some of the principal countries of the world, the delay in publication being also shown. The trade of these countries in the year 1925 represented about 70 per cent. of the whole trade of the world.

P.T.O.

Country.	Approximate delay in Publication.	Degree of detail in respect of:	
		Individual items of statistical nomenclature.	Countries with which trade carried on.
United Kingdom.	10 working days.	Principal items or groups of items only distinguished. Particulars of trade with principal countries shown for leading items or groups of items. All the above shown for both quantities (where available) and values.	Quarterly tables of total trade with each country.
United States.	Part I. (Imports & Exports) A month. Part II. (Re-exports, Summaries,&c.) Two months.	All items distinguished. Particulars of trade with principal countries shown for principal items only.	Monthly tables of total trade with each country.
France.	6 weeks.	All items distinguished. For principal articles a few countries shown for quantities only.	Monthly tables showing for each of about 20 countries particulars of trade in principal groups of articles.
Germany.	A month.	All items distinguished. Principal countries distinguished for all (except minor) items for quantities only.	Same as United Kingdom and in addition quarterly tables of trade with 43 countries under each of 186 headings of Brussels Convention nomenclature.
Netherlands.	Part I. A fortnight. Part II. A month.	Same as Germany, but values also shown for countries.	Quarterly tables showing for each of six countries particulars of trade in 15 classes of goods.
Belgium (incl. Luxembourg).	A month.	Same as Netherlands.	Monthly tables showing for each of nine countries particulars of trade in 21 classes of goods and in principal items.
Italy.	10 weeks.	Similar to France.	Similar to France.
Sweden.	A fortnight.	Principal items only shown and in respect of quantities only.	No information.

Country.	Approximate delay in Publication.	Degree in detail in respect of :	
		Individual items of statistical nomenclature.	Countries with which trade carried on.
Denmark	A month.	Principal items only shown and in respect of quantities only. For most important items, principal countries are distinguished.	Monthly tables showing, for each of 14 countries, value of trade by groups and sub-groups.
Switzerland.	A fortnight.	All items distinguished.	All countries shown in respect of each item for current month only and total value of trade with each country.
Japan.	2 months.	All items distinguished. For a few commodities or groups of commodities principal countries are distinguished in supplementary tables.	Monthly tables of total trade with individual countries.
Canada.	A month.	All items distinguished. United Kingdom and United States shown for each item and other principal countries for principal items.	Monthly tables showing total value of trade with each country.
New Zealand.	A month.	Principal items only distinguished (no particulars of countries).	Monthly tables showing total value of trade with 36 countries or groups of countries.
Australia.	2 months (issued quarterly only).	Ditto. For a few articles exported particulars of principal countries are shown.	Imports by main groups shown for 6 principal countries.
Union of S. Africa.	2 months.	Principal items only distinguished (no country particulars).	Quarterly tables showing total value of trade with 64 countries.
India.	A month.	All except minor items distinguished. Particulars of trade with principal countries shown for leading items or groups of items.	Monthly tables showing total value of trade with 37 countries.

In addition to particulars of imports and exports, Monthly Trade Returns usually contain information as to dutiable goods entered for consumption, and sometimes as to goods chargeable with Excise Duty. The practices of the different countries in these matters vary greatly and depend on the magnitude of the field covered by duties in the various countries. In the United Kingdom Returns the information of this character provided is as follows :—In respect of the principal commodities of food and drink, on which import duties are chargeable, and of tobacco, particulars are shown in the monthly Import Tables of the quantities of these goods entered for consumption. There is also a monthly table at the end of the volume showing the quantities of the principal dutiable articles in bonded stores at the end of the month. In addition, in the April, July, &c., issues, quarterly tables are given, showing (1) the quantities of excisable articles chargeable with duty (*i.e.* the actual production of these goods in this country apart from any differences in stocks not yet assessed for duty); (2) the consumption of spirits, both home-made and foreign; and (3) the value of the goods liable to Key Industry duty entered for home consumption.

Annual Trade Returns.

The primary object of Annual Returns, so far as the United Kingdom at any rate is concerned, is to collect and present in as great detail as is practicable, and also in abstract form, all the information available from the original returns. The "Annual Statement of the Trade of the United Kingdom" is published in four volumes, which make their appearance towards the end of the year following that to which the figures relate. Volume I consists of summary information. It includes tables showing the total imports, the re-exports, the net imports, and the British exports of each item of the statistical nomenclature and tables showing the imports (gross and net) from and exports and re-exports to each country of each of the three main classes of goods in which the individual items are grouped—*i.e.* (1) food, drink, and tobacco; (2) raw materials and articles mainly unmanufactured; and (3) articles wholly or mainly manufactured. Volume II contains detailed tables of the imports and re-exports of each item from and to each of the principal countries concerned : where the trade in any particular item is so small that separate particulars for individual countries would not be justified, particulars of the imports from or re-exports to British countries as a whole and Foreign countries as a whole are always shown. Between these two main tables there is an interesting table giving particulars of the home consumption of each description of dutiable goods imported. Volume III consists of one table only, showing in respect of British exports similar particulars to those given in Volume II in respect of imports and re-exports.

The chief part of Volume IV consists of tables showing (1) the trade of the individual ports of the United Kingdom, distinguishing the principal articles or groups of articles imported or exported; and (2) the trade of the United Kingdom as a whole with individual countries, distinguishing the principal articles

or groups of articles imported from or exported to these countries. This latter table is, of course, particularly useful in reviewing generally the extent and nature of our trade with any particular country. The amount of detail given is not very large, but further details are easily secured by combining the information given in these tables with that contained in the detailed Tables in Volumes II and III.

The amount of detail contained in Annual Trade Returns is so great that it would take up a great deal of space to compare the actual form in which the chief countries of the world present the information in these returns. I propose, therefore, to limit the comparison to the main tables in the Annual Trade Returns of five of the leading countries exporting manufactures, namely the United States, France, Germany, Belgium, and the Netherlands. The export of manufactures from these countries and from the United Kingdom accounted in 1925 for rather over 70 per cent. of the world's total exports of manufactures.

United States. The particulars of Annual Trade are published in two parts some nine or ten months after the end of the year in "Foreign Commerce and Navigation of the United States for the calendar year 192 ." The main tables in Part I show, for general imports and domestic exports, particulars of trade in some 1,200 different kinds of goods distinguishing for each kind all the countries concerned; similar tables are also provided showing the trade of each United States Customs District. Part II contains corresponding particulars of re-exports and details of the aggregate imports for home consumption of each of some 5,000 items distinguished in the tariff. It also contains particulars of the trade with individual countries on a similar basis to those shown in Volume IV of our own Annual Statement.

The values shown for imports represent generally values in the exporting country (*i.e.* they exclude all costs of transport to the United States), and those shown for exports are values at the ports of the United States. Generally speaking, the countries shown represent countries of consignment.

France. Volume I of "Tableau Général du Commerce et de la Navigation," published about a year after the expiry of the year to which the figures relate, contains the tables of trade. The main tables of imports and exports relate to both general and special trade, and show for each of some 1,500 kinds of goods the net quantities in respect of each of the principal countries concerned, distinguishing French Possessions, and the values in respect of totals only. There are also tables of trade with individual countries showing, in rather less detail than in our Volume IV, the quantities and values of the principal articles or groups of articles concerned, and the import duties collected in respect of each of these articles. Similar tables are given of the trade in the principal goods through individual ports.

The values shown in the Annual Return are official values, revised annually, and representing approximately c.i.f. values for imports and f.o.b. values for exports. On the other hand, in the Monthly Returns, the values shown have been declared

values for imports since 1921 and declared values for exports since the beginning of 1927. Countries shown are, generally speaking, countries of consignment.

France differs from the other principal countries, whose annual returns are discussed here, in that her records of "Special trade" do not include the improvement trade (*i.e.* goods imported into France temporarily for working up and re-export).

Germany. "Der Auswartige Handel Deutschlands," published in a number of separate parts towards the end of the year following that to which the figures relate, contains the annual trade statistics. The main tables show for some 1,100 descriptions of goods the imports and exports (special trade), distinguishing the principal countries on the lines of the main tables in Volumes II and III of our own returns. Tables of trade with each country are provided, and show the trade in each item in which the trade is of any considerable dimensions. No particulars are given in respect of trade at the individual ports.

The values represented in the case of imports are generally official values, kept up to date, and for exports declared values f.o.b. The particulars in respect of countries represent as far as possible countries of origin or of ultimate destination.

Belgo-Luxembourg Economic Union. "Tableau Annuel du Commerce avec les Pays Etrangers" is now published some eighteen months after the end of the year concerned. The main tables relate to special trade in some 3,000 items of the tariff classification. For each item the principal countries are shown as in our Volumes II and III. Tables of trade with individual countries are provided, showing for each country the trade in some two hundred standard items or groups of items. General trade through individual ports is shown in corresponding detail.

The values shown are declared values, c.i.f. for imports and f.o.b. for exports. The particulars of trade with countries relate to countries of consignment.

Netherlands. "Jaarstatistiek van den In-, Uit-, en Doorvoer" is published in two parts about the middle of the following year. The main tables relate to special trade, and give for each of about 1,200 items particulars of the trade with each country. Tables of trade with individual countries are also provided, showing the trade in some 140 principal items or groups of items. Other tables contain particulars of the general and transit trade at individual ports in respect of about 100 principal items or groups of items.

The values shown represent declared values, c.i.f. for imports and f.o.b. for exports, and the countries shown are the countries to or from which the goods are consigned.

Before leaving this branch of the subject, a few observations on comparisons of the recorded trade of any particular country at different periods of time may not be out of place. The most popular comparison is that between trade now with trade in 1913, though those who use this comparison are apt to regard 1913 as a normal year, and to forget that it was a year of great trade

activity. Apart from difficulties, caused by changes in statistical nomenclature, methods of valuation, &c., in a comparison of the trade in any particular description of goods over so long a period, there is another difficulty of a more general character, namely changes in frontiers.

In our own case trade with Southern Ireland was until the end of March, 1923, treated as internal trade, while since then it has been recorded as external trade. Our trade with Southern Ireland is very much greater than Southern Ireland's direct trade with other countries, and so the effect of this change has been to swell the recorded trade of the United Kingdom—in the aggregate by nearly 5 per cent. By piecing together our own trade returns and those of the Irish Free States, it is possible to estimate the value of the trade of the British Isles as a whole, but such estimates are not, of course, included in the published records of trades.

In the case, however, of the numerous changes in frontiers which took place on the Continent after the war, it is generally impossible to make such estimates. Apart from the newly formed "Succession" States to Austria-Hungary and Russia, changes in frontiers considerably affect the trades of France, Germany, and Belgium (which now includes Luxembourg in the Economic Union), while in the case of Germany an additional complication is that reparations in kind were until the end of 1926 excluded from the records of exports. It has been roughly estimated that the general effect on the recorded trade of the world as a whole of such changes in frontiers has been to increase the recorded value of any given volume of actual trade by nearly 5 per cent., which happens to be about the same proportion as the recorded value of any given volume of our own trade has been increased owing to the changed position of Southern Ireland.

INDUSTRIAL PRODUCTION.

I turn now to statistics of industrial production. This country, whose industrial history is longer and where industry accounts for a larger proportion of occupied persons than any other country of the world, was for many years content with information of limited range and partial in character. Returns of factory employees, some particulars of machinery in textile factories and returns of minerals raised, and of certain of the principal metals smelted, together with a yearly return of ships launched, were for long the only official sources of information, though private enterprise furnished some additional particulars. It was only in 1906 that legislative powers, somewhat narrowly limited, were secured for a comprehensive survey of our industries; and a regular succession of quinquennial enumerations seemed secure when, in 1911, the repetition of the first inquiry, that relating to 1907, was duly authorized for each succeeding fifth year. Before, however, the material gathered for 1912 could be duly checked and worked up, the war intervened, the work had to be stopped, and the Board to be relieved of their statutory liability to take a Census in every fifth year. It has never been possible to complete the material for this second Census and so publish

the results; but in those trades where the state of the material justified it some particulars in respect of the 1912 Census are now being published in the "Board of Trade Journal" alongside the preliminary returns for the third Census taken in respect of the year 1924, and it is expected that more of this material will be included in the Final Report.

Turning to other countries, and considering first the English-speaking countries: the United States has the longest history in making general surveys of industrial production, a decennial census of manufactures having been taken since 1850 at the same time as the decennial census of population; while during the present century a quinquennial industrial census was made from 1900 to 1920. Since 1920 the interval has been further shortened to two years. In Canada also a decennial census of manufactures has been taken at the same time as the census of population since the achievement of Confederation (1867), and, beginning with 1917, an annual inquiry has been carried out. In Australia an annual inquiry into manufacturing industry has been carried out since the year 1903. New Zealand, like the United States and Canada, accompanied its population census with an industrial census from 1867; since 1881 the returns have been quinquennial, and since 1918-19 they have become annual. In South Africa an annual census of industries was started in 1915-16.

In other countries very much less has been done to secure comprehensive surveys of industrial production. In Russia such surveys were made in 1900 and 1908, and in Norway in 1916; while in Sweden and Japan annual returns of numbers employed, gross value of output and mechanical power available are obtained. In Sweden these general returns were supplemented in the years 1914-17 by special investigations into particular industries (mining, textile and clothing, leather, &c.), in which an attempt was made to calculate the value of the net output of these industries. In other countries, however, such figures of industrial production as have been obtained from time to time have been directed to ascertaining the position of particular industries rather than to a scientific survey of industrial production as a whole. Thus, in Germany, series of industrial inquiries were carried out in 1895 and 1907, and similar inquiries, relating to numbers of workers and mechanical power employed in industry, are now being carried out in respect of 1925; while in the years following 1907 more detailed investigations were made into certain industries, such as the textile and chemical industries, which investigations included information as to the value of output, &c. In Holland, particulars relating to the position of various industries in 1913 and 1916 have been secured, and later inquiries have been made covering particular sections of industry. In Denmark the factory inspection system enabled annual returns to be secured of the number of establishments in each industry, the numbers of persons, and the mechanical power employed, additional details being obtained on special occasions, *e.g.* in 1897, 1906, and 1914. Since 1920 particulars of output have been secured annually in respect of industry generally, but these particulars have not been exhaustive in all cases.

Scope of Inquiry.

The inquiry authorized in this country by the Census of Production Act, 1906, included information as to the nature, amount, the value of goods produced, the value of materials used and the cost of work given out, the number of persons employed and the number of days of operation of the establishments concerned, and the kind and amount of mechanical power used. Among persons employed, wage-earners were distinguished from others, males from females, and young persons from adults. The particulars of output included the values and quantities of different kinds of goods produced. As regards quantities, the particulars were restricted to the same detail as was obtained in respect of goods imported or exported.

Differing from the other countries in which a comprehensive survey of production has been adopted as a part of the regular machinery of Government, we in this country are not entitled to require separate particulars of the different kinds of materials used in manufacture. Only the aggregate cost of all materials used in production can be required. This information makes it possible to ascertain the value of the net output (*i.e.* value added by manufacture), but it furnishes no information as to the nature of the materials used, which was one of the deliberate objects, for example, of the Dutch inquiry. Even the important item of fuel consumption cannot be compulsorily ascertained.

Another point of difference is that we have, in this country, no powers to ascertain the amounts paid in wages. Parallel with the 1924 Census an investigation of a voluntary character has been undertaken by the Ministry of Labour, and it is hoped that the results obtained, when compared with the Census of Production returns, will yield a considerable amount of useful information.

Another item of information omitted by us but obtained by most countries which have undertaken comprehensive inquiries into production is that of the capital employed. In the United States, the aggregate capital used was reported at each census until that of 1919. In 1921, however, this inquiry was omitted in view, presumably, of the following paragraph contained in the report of the 1919 Census :—"The data compiled in respect to capital, however . . . as at all preceding censuses of manufactures, have been so defective as to be of little value, except as indicating very general conditions. In fact, it has been repeatedly recommended by the Census Authorities that this inquiry be omitted from the schedule. While there are some establishments whose accounting systems are such that an accurate return for capital could be made, this is not true of the great majority, and the figures, therefore, do not show the actual amount of capital invested." The view expressed in this paragraph was shared by those responsible for laying down the scheme of our own Census. In the Self-Governing Dominions, the inquiry as to capital employed covers in all cases particulars of the value of land and buildings, and of plant and machinery.

Principal Results Recorded.

To those actually engaged in industry the most interesting

data are, perhaps, those contained in the preliminary reviews which, for the 1924 Census, are now being published in the "Board of Trade Journal." Such reviews have already been published in respect of seventy-seven trades out of the 120 into which the whole field of industry was divided, and it is hoped to cover the rest of the ground before the end of this year. The information given covers the quantity (where recorded) and the value of the various products of firms making Returns on the Schedules for the individual trades together with the corresponding figures of net imports and exports, the cost of materials and the value of the net output, the numbers of persons employed, and the capacity of the engines and electrical generators at the factories. Comparative figures are given for 1907 and for 1912 where possible. Thus much information is available as to the consumption of many manufactured products in this country, which may be of considerable use to manufacturers in guiding them as to future policy.

When the whole inquiry has been completed, much information of a more general character becomes available. The final results of the 1907 Census enabled us for the first time to measure the values created by our industrial activities and to compare the different industries of the country on the basis of these values. Again, a basis was obtained for comparing our industrial production with the value of the services rendered by transport and commerce, whose function it is to link together different industries and producer and consumer. Further, the Census provided a basis, alternative to that of the Income Tax Returns, for estimating the national income of the country, and it furnished a means of determining the relative and also the absolute importance of the different kinds of goods which constitute the material income of the country.

Another matter on which information is furnished is the relation of our foreign trade to our home industrial production. It was calculated that in 1907 the total exports from this country were about 30 per cent. of the goods produced, compared with something like 10 per cent. in the case of the United States; while in the cotton industry of this country the exports were nearly 75 per cent. of the production. It will be of great importance to learn to what extent these percentages differed in 1924. It would appear generally that the home market is now relatively more important, compared with the export market, than it was twenty years ago.

When a sequence of censuses at regular intervals has been held, it will be possible to measure the changes taking place in the magnitude of particular industries and the growth of new industries as well as changes in the total volume of industry. It is also the intention of the Board of Trade to establish as soon as possible, on the basis of the data available from the 1924 Census, a monthly or quarterly index of general industrial activity, which should be of great utility to the business world, provided the foundation can be laid sufficiently wide to make the index representative of industry as a whole. Briefly, the method to be adopted is as follows. The results of the 1924 Census will

render it possible to ascertain the relative importance of the different industries on the basis of the value of their net output. In as many as possible of the more important industries, and in certain other industries which may be taken as representative, the Board are seeking the co-operation of trade associations (or, where necessary, of important individual firms) to secure particulars showing the variations in the volume of their output from month to month. The individual returns will be treated as strictly confidential, but they will be weighted and combined, on the basis of net output ascertained in the 1924 Census, so as to form a composite index which, it is hoped, will reflect the variations in the volume of production of industry as a whole. Later, when the results of the next Census of Production become available, the weighting of the output of the individual trades will be revised on the basis of these results, in order that the basis of the index of production may be kept up to date. I take this opportunity of appealing, on behalf of the Board, to all those concerned, whether directly or indirectly, to do what they can to make the index of production representative of the widest possible field of industry.

SUMMARY.

The field discussed in this paper consists of two important branches of general trade statistics compiled by Government Departments, namely statistics of external trade and statistics of industrial production.

Considering first the statistics of external trade, an explanation has been given of the degree of detail in which information regarding our own trade is collected and is available on application to the Statistical Office of His Majesty's Customs and Excise. We have then passed to the consideration of what is, in fact, published in our own Monthly and Annual Trade Returns, and to a comparison of these publications with those of other important countries.

As regards the monthly "Accounts relating to the Trade and Navigation of the United Kingdom," the primary importance of early publication has been pointed out; the reason is that overseas trade forms such a large part of the total trade of this country that the monthly figures give a very useful indication of the activity of trade. A tabular comparison has then been given of the delay in publication of, and degree of detail contained in, the monthly returns of the United Kingdom and of fifteen other countries. This comparison shows that the Monthly Trade Returns of the United Kingdom, published on the tenth working day of the following month, appear at least as early as those of any other country; that, while in the United Kingdom Returns the particulars relate to principal items or groups of items (and to the principal countries for leading items), in the Returns of some other countries particulars are shown for each item in the statistical nomenclature; and that, while a few countries give some details of the trade with a certain number of countries, others publish tables corresponding to those we publish quarterly, showing the total value of the trade with individual countries.

Attention has next been given to the Annual Trade Returns of the United Kingdom and of five important foreign countries—the United States, France, Germany, Belgium, and the Netherlands. The "Annual Statement of the Trade of the United Kingdom" is published in four volumes in the autumn of the following year. Volume I consists of Abstract Tables; Volumes II and III give, for imports and re-exports and for British exports respectively, particulars of trade with the principal countries concerned in each item of the statistical nomenclature; and Volume IV contains tables showing the principal descriptions of goods passing through each of our ports and the principal descriptions of goods making up our trade with each country. A short account has been given of the main tables contained in the Annual Trade Returns of the other five countries mentioned above, and various methods of valuing imports and exports and of defining countries of provenance of imports and of destination of exports have been pointed out. These differences of definition are often responsible for considerable variations between the recorded exports from one country to a second and the corresponding imports of the second country, and we are frequently asked to explain such variations.

Reference has also been made to the effects of changes of frontier on the comparability of the figures of any particular country at different dates, but the more intricate question of changes in the volume of trade of any particular country has been left on one side. In our own case we have published for some years quarterly in the "Board of Trade Journal" articles discussing changes in the volume and value of the trade of the United Kingdom on the basis of 1913 and, more recently, on the basis of 1924; the volume of the trade of the British Isles as a whole (including the Irish Free State) is also estimated on the basis of its volume in 1913.

Turning to statistics of industrial production as a whole, it has been seen that, apart from inquiries directed to ascertaining the position of particular industries, little has been done on these lines outside the great English-speaking countries. The United States has the longest history in this respect, while in the four great Self-Governing Dominions of the British Empire an annual Census of Production is now part of the ordinary mechanism of government. In this country the first Census of Production was held in 1907, and the second, which could not be completed owing to the war, in 1912. The third, in respect of the year 1924, is now reaching the final stages, and preliminary reports covering a number of trades have already been published in the "Board of Trade Journal." Owing to the lapse of time between 1907 and 1924, the 1924 Census must be regarded rather as a starting-point for a new series of Censuses to be held in the future at regular intervals, rather than as a satisfactory means of measuring the progress of industry since 1907.

I have referred lastly to the intention of the Board of Trade to compile and publish a monthly or quarterly index of industrial production in this country. The foundation for such an index is laid by the Census of Production, and its success will be mainly

dependent on the extent to which it is possible to secure the co-operation of particular Trade Associations or individual firms. The importance of securing reliable statistics of production from the points of view both of costings and of forecasting is much more widely recognized in this country now than it used to be, and we have every hope that the information necessary to compile an index of industrial production will be forthcoming.

The following spoke in the discussion on Mr. Overton's paper:—Mr. S. J. Nightingale; Dr. R. S. Hutton; Mr. G. F. Schwartz; Mr. G. W. Keeling; Mr. A. Zaiman, B.A., F.S.S.; Mr. J. G. Pearce, B.Sc., M.I.E.E.; and Mr. Percy Cohen.

THE TRADE SURVEY.

By FRED HALL, B.Sc. (Econ.)

(Assistant Economist, British Electrical and Allied Manufacturers' Association).

In approaching the question of Trade Surveys the Conference on Special Libraries overlaps with almost every conference of business men and economists. To men of affairs the ability to lay hands on authoritative information becomes ever of greater value and, in consequence, no agenda is complete without the inclusion of a study of the collection, use, or application of those statistical and other facts the assembly of which is one function of a survey of trade. This constant discussion does not by any means indicate unanimity on the subjects involved. In this country it is still true that business research continues in many quarters to be regarded as a theoretical fad and, even when its utility is agreed, there is plenty of diversity of opinion as to its practice.

This Conference will no doubt find it easy to eliminate one half of the controversy. It will proceed on the assumption that knowledge of the practical economics of the world, like any other form of knowledge, is valuable for its own sake, and that by proper planning and organization this value can be greatly extended and increased. And because the Conference has practical purposes in view it will keep in mind the question of what steps might be taken to assist in adding to the utility of trade information.

There can be little question that the mass of particulars on economic matters now in existence defies every rule of librarianship. From innumerable sources comes a welter of facts and figures, multiplied in scores of journals to which no generally available index exists. Government departments, private firms, trade and general newspapers, propaganda organizations, and research institutions all make their contributions, and the reduplication which they effect in this country finds its counterpart in similar conditions abroad. There is, in addition, a sort of superstructure of international duplications, which sometimes results in foreign sources coming to be of greater value than home ones on account of their special compilations of comparative figures.

So far as conditions in this country are concerned, the salient features of the present situation may be summed up as follows:—

in the first place, it is clear that a great deal of time and money is being expended in the provision of information on the state of industry and trade, and, secondly, by general agreement, in the case of most industries, that material is either inadequate to provide real guidance to students of the economic situation, or else it is not easily and generally accessible.

Before proceeding to estimate the prospects of the trade survey in Great Britain, it will be well to consider the nature of its functions and of the ideal contribution it might conceivably make to the economic life of the country. Industry and trade have their roots in the manufacture and exchange of primitive societies whose needs, over long periods, were both constant and well known. Even until fairly recent times, the British manufacturer could be almost as certain of the demand for his goods as a tribal hunter. But the spread of industrialism and the rapid and ever increasing development of communications have changed all that. Directly or indirectly, there is no producer or trader whose business is not susceptible to world-wide influences—some obvious enough, but many too imponderable for him to be able to do more than observe their effects. The object of trade surveys is to give the industrialist something in the way of positive knowledge and solid inference, which may serve his own imagination and foresight as a basis for judgment.

The perfect system of trade survey in any country would do three things. It would constitute a record of the more or less recent past, it would give the latest possible imformation relating to selected determinants of the business situation at the moment of issue, and it would serve as a forecast of probable developments. The four essential features of the perfect survey would be accuracy, adequacy, promptness, and availability. The form of its appearance would be dictated, necessarily, by the type of national economy it was intended to serve. A survey for the information of the inhabitants of Nauru Island, whose sole economic contribution is the export of phosphates for agricultural purposes, would be infinitely simpler, in every sense of the word, than one relating to the manifold trade activities and diversified markets of a country like our own.

This is one of the questions relating to trade surveys of particular interest to a Conference such as this. Anybody who has been concerned with the rapid provision of information on any subject knows what a difference is made by the convenience of the form and the orderliness of the arrangement in which it is issued. At present, questions of arrangement are met to suit the convenience of the most immediately interested parties, without much regard being paid to the fact that the information collected should meet the needs and serve the purposes of a wider circle. Those who are interested in industrial statistics know, for example, that the classifications most useful to the manufacturer may not always coincide with those convenient to the merchant or the Customs authorities. There are signs that the need for co-ordination and for the arrangement of trade statistics on well considered lines is coming to be recognized. Any similar tendency that can possibly be developed in regard to the wider problems of the best form of

trade survey service for British business is one that should be most carefully fostered by all concerned.

At present, the seeker after statistics is confronted, as has been said, with a mass of reports and statements appearing in a multitude of publications. For some of the things he wants he may know where and when to look; every business man can turn immediately to the column of the financial daily relevant to his own particular needs. But if the man who usually wants news of one or two markets should suddenly desire a conspectus of general economic conditions, this sort of dexterity would not greatly assist him. He would be compelled to wade through seas of material, finding one helpful foothold by blind chance, overlooking another lying under his very eyes, confronted on all sides with statements and figures which, although innocent of inverted commas, he would recognize as quotations from some common source at which he would probably never arrive. It is a question worth considering whether a Conference such as this could not undertake or inspire the undertaking of an index of information appearing regularly in authoritative periodicals, which would serve to put a lay searcher on the track of any particular trade subject.

So far as the trade survey itself is concerned, it is a matter for debate whether, in order to be of greatest value all round, a principal aim should be to produce one general bulletin that should provide a background against which a business man could envisage his own particular problems. Those who would welcome such a publication are those who insist on the fundamental unity of economic conditions. Others, who take the view that the factors influencing the various industries and trades are essentially distinct, will prefer to emphasize the importance of specialist surveys. The only agency in this country providing anything like a satisfactory all-round survey—the London and Cambridge Economic service—combines both methods. Its monthly bulletin and supplement offer a background of indices and comment on conditions at home and abroad, while occasional reports are issued on the state of affairs in particular industries.

In America, it is clear that the general trade survey is widely regarded as being of considerable value. In addition to the Survey of Current Business, issued by the U.S. Department of Commerce and the Harvard Economic Service, there are half-a-dozen bureaux, run as commercial ventures, which issue regular reports to subscribers all over the United States. The official U.S. Survey, a journal of some fifty pages published monthly, is compiled by three official bureaux—those of the Census, Commerce, and Standards—from Government and authoritative trade sources. It is designed to present each month a picture of the business situation by setting forth the principal facts regarding the various lines of industry and trade. Realizing that current statistics are highly perishable and that to be of use they must reach the business man at the earliest possible moment, the Department distributes supplements every week, the contents of which are incorporated in the subsequent issue of the Survey.

Supposing that the existing trade intelligence systems in this country could be so co-ordinated and organized as to present to the

business world a survey that was adequate as the basis for judgment as to present tendencies, what would be the principal value of that information in the service of the community? The World Economic Conference thought that it would have a double function, one of immediate social importance, one primarily industrial. "It should," said the Conference, "help the public to form a collective opinion which is at once well-informed and reasonable." In these days, when matters of industrial policy impinge more and more on the field of politics and when differences of political temperament are exacerbated by constant reference to redistribution of wealth and industrial control, any means of securing an informed and reasonable background would be welcome. It would be interesting to know whether the Government shares the hopes of the Economic Conference to the extent of being willing to expend a few thousand pounds on trying to secure their realization.

In the second place, the same assembly anticipated, as a result of an improved information service, first, a quickening of social motive on the part of industrialists, and, secondly, the facilitation of "a proper adjustment of supply to demand and the laying down of a policy of production counteracting the effects of fluctuations of commercial activity. This would appear to be a slightly more realizable possibility. Granting the assumption—no small one—that the extended knowledge of marketing possibilities secured by a thorough-going survey would be assimilated and applied by the majority of those engaged in the direction of business, it might result in a reduction of the more extreme movements of the trade cycle.

What may be called the sub-swell of cyclical fluctuations has been ascribed to many first causes, from sun-spots and Venus—*i.e.* the planetary Venus—down to ordinary sublunary stupidity, and into the various theories it has provoked it is fortunately unnecessary to enter here. What is generally agreed, however, is that a comparatively gentle fluctuation originating in, say, a bad harvest, may easily become magnified by the world's economic organization into a more violent movement. This, in turn, is reflected by the alternation of a crisis of high prices and over-production with a period of slump—both points in the cycle involving dislocation and loss to industry as a whole. The magnifying factor here lies in the hydra-headedness of industry. Many producers, working independently, individually become aware of expanding demand by rising prices and of a contracting demand by falling prices. Since each one is liable to be optimistic on a rising, and pessimistic on a falling, market, the net impetus given to increasing or diminishing production as a whole is always liable to be unrelated to the real needs of the movement. In addition, the tendency for producers to be seeking financial accommodation simultaneously brings a fresh factor into play in the form of the financial houses, which, in a period of boom, will sooner or later be faced with the alternatives of checking the upward swing or of becoming themselves unsafe.

If, by means of a thorough survey, the possibilities and limitations of the market could be suggested to producers by indicators more closely related to the actual position than a trend of prices need be, a big step forward would have been taken towards

preventing the undue accentuations which are so damaging to industry and trade. This, if it could be done, would be ample justification for the development of the trade survey.

But it must be recognized that the very hydra-headedness of industry that makes some such realistic appreciation of the position so necessary is also perhaps the greatest impediment in the way of securing the information that would be necessary. Partly by tradition, partly by the necessities of the case, the British business man is not very ready to present everybody with detailed facts of his activities. The result is that, in the majority of cases, it is impossible to get information on certain matters essential for the proper estimating of the trade position. For how many industries, for example, are there monthly returns of production, stocks in hand, and unfilled orders? The coal industry, shipbuilding, iron and steel publish their output figures, the first because it has to do so by law; and some industries collect details from their member-firms without making them public. In this connexion, one recalls the remark of a member of this Conference intimately concerned with the preparation of trade surveys, to the effect that "people are always asking for information and expecting someone to obtain it when they themselves refuse to divulge similar details for their own industries."

This aspect of the problem is naturally one of especial importance here. Every trade association in the country is, actually or potentially, a special library harbouring information of the utmost value to the business and general communities. Should these libraries be tapped, and how? Is it possible and practicable for them to issue returns of aggregate figures which shall be informative without prejudicing their own interests? It is done in the United States—why not here?

The general answer that is made to these questions not only gives the key to the fundamental difference in American and British economics, but also brings out a further difficulty in the way of securing any survey that shall be of general value to the country. It consists in the fact that, while Britain's output is absorbed to the extent of one quarter by foreign trade, the United States exports only about 5 per cent. of its production. This means, firstly, that "a trade cycle survey, to be fully effective for Britain, would require to be international in the widest possible sense and even imagination baulks at the idea"; and, secondly, that, in a period of even intenser competition for world markets British industrialists are unlikely to divulge any information that may serve as an index to their competitors as regards the location and possibilities of their markets.

Assuming, then, that the general industrial situation were static, one would be inclined to conclude that no thoroughly adequate system of trade survey is likely to be developed in this country in the near future. But, of course, the assumption is by no means valid. For one reason or another, the industrialists and traders of all the great nations are being compelled to relinquish tradition and rule-of-thumb methods in the organization of their work. Scientific method and "rationalization" are being applied ever more closely to all phases of economic activity from the proper placing of machinery to the consideration, as by the World Economic Con-

ference, of international organization. Industrialists all over the world are in revolt against "the controlling power of demand," and are seeking so to recondition their principal markets that they, as producers, shall be able to impose upon them a fair degree of stability. Every day the European trade press yields fresh evidence of this insistent search for new methods of securing a closer control of price by producing agencies. Big industry has definitely entered the era of organized production planned, on the one hand, to meet the demand of a continental and world market and, on the other, to offer a common foundation of security to the various producers concerned.

Now it is clear that, whatever may be the attitude of individual firms to the preparation of vital statistics, as soon as an industry decides to organize itself as a unit the collection of such material becomes essential. Whether it be a question of determining total production, the quota of its members, or price-fixing, the association, cartel or trust must have access to all the information which would be of value to a trade survey. At the same time, the fact of association would remove most, if not all, of the grounds on which the reluctance of individual firms to give particulars of their working is based.

Whatever the position of industrial organization at a given moment, we shall continue, short of wholesale nationalization, to depend for the provision of information—except in special cases—upon the willingness of these immediately concerned, a factor in the situation not easily modified by the resolution of any assembly other than Parliament. While from our special view-point we may watch with added interest the modern tendencies which are influencing this side of the problem, our practical efforts must, I think, be based on the assumption that no great increase in the amount of information available is likely to take place in the near future, and must aim at securing the maximum public utility from that which is already available. Even under present conditions, the existing reviews together with the industrial and trade press constitute a special library, although a liquid one. Perhaps the planning of this library —incomplete as it is—may be a more profitable undertaking than the attempt to hasten on the perfect survey of trade—a venture which should appeal directly to those attending this Conference.

In the discussion on Mr. Hall's paper, Mr. H. PARKINSON described the scope of "The Economist's" Monthly Trade Survey, and the lessons suggested by the experience of the last few years. Wider knowledge of contemporary conditions as regards production, stocks of commodities, and the volume of new orders was indispensable if the Trade Survey were to be of maximum service to the trading community. Instancing the achievements of America in this respect since the depression of 1921, the speaker pleaded for the co-operation of members of ASLIB in the task of obtaining the necessary data.

Mr. A. Zaiman, B.A., F.S.S., also spoke.

The following Resolution was passed:—

> *Resolved:* That it be strongly recommended to the Council of ASLIB that it should appoint forthwith a committee of experts to review the existing sources of industrial and economic statistics and information with a view to the preparation of an index to these sources.

BUSINESS FORECASTING.

By W. WALLACE, B.Com. (Lond.).
(Economic Adviser to Rowntree & Co., Ltd.).

DEFINITION OF THE SUBJECT.

As "Business Forecasting" is still a somewhat novel subject in this country, it will be well at the outset to attempt to define what the subject covers. I treat "Business Forecasting" as the attempt to foresee the future trend of business in a given field: that is to say, taking the volume of business as it is in a given area, what is likely to be the volume of business in that area over a given future period?

It should be distinguished in the first place, therefore, from any estimate of the volume of business capable of being obtained in a given field *to-day*, that is to say, the *present potential market.* This is the field of market research or market analysis. If we may borrow an analogy from weather forecasting, we say, "Given the present weather in this area, what changes are likely to occur over a given period?" In other words, we are not concerned at the moment with the question of which is in fact "the drier side of Britain," or how that dryness might be affected by a policy of afforestation! We take present conditions for granted and concentrate on an estimate of changes. To return from weather to business, we say: "Taking the present size of the market for granted, what are the future prospects of demand?"

The "market" in which we are interested may be that for the product of a single business, or for a whole industry, or for goods in general; but the last must always be the starting point. A vital consideration in the sales of any business in a future period must be the general conditions of prosperity, or the reverse, in the market in question (whether a town, a country, or a continent). We shall confine ourselves, therefore, to considering to what extent a dependable forecast can be made of the future course of business in general in a given area.

FORECASTS MUST BE MADE.

Every business man, whether manufacturer or merchant, buyer or seller, must continually make such a forecast. He may not do it consciously; but do it he must. Business under a system of free enterprise and free competition is inevitably a forecasting profession. Indeed, success in most cases depends more upon the accuracy of this forecast than upon any technical proficiency in manufacture or merchanting. It may be regrettable, but it is so. Moreover, this forecasting must be on the basis of statistics, by whatever other name they may be called. There is no question, therefore, of whether or not we should make a forecast; the only question is as to whether there is any scientific method which will help to make our necessary forecasts more accurate.

THE SPECIFIC PROBLEM.

To give concreteness to the problem, let us look at it through the eyes of a typical business man; and let us take for this purpose the manufacturer of a well established proprietary article. Let us assume that now in September 1927, he is surveying the future course of his sales, and is wondering in particular how much he is likely to sell in 1928. He is, of course, vitally concerned in what should be his volume of production between now and Christmas; but that is a matter on which he must rely primarily on current orders and other internal evidence of his business. He must also arrive at some provisional conclusion as to the volume of his business over, say, the next decade, as a guide to his capital expenditure on buildings, plant and machinery and so on. He must distinguish between a genuine growth of demand and a mere flash in the pan. This is a matter where a considered judgment on the probable course of prosperity in Britain in general will be very important, but in this case again the final decision must be primarily based on his individual assessment of the strength of his business in relation to that of competitors. The forecast where scientific methods are likely to be most helpful, and the best instance for our purpose, is that for 1928. How can he arrive at the most accurate conclusion on this subject?

If he is reasonably efficient he will, of course, have before him statistics of his sales over a period of years at monthly intervals at least, and divided at any rate into main categories. At first sight they may seem to present no clear picture; but simple statistical treatment will soon enable him to distinguish (*a*) the *secular trend*; or long period growth of his business, and (*b*) the *seasonal variations*, if any. If, therefore, other things are equal, he can calculate the volume of his sales in 1928 by adding to the estimated volume of 1927 the percentage of increase (or decrease) which past experience shows he may reasonably count upon as representing long-period trend. Then he can spread this volume over the year according to the definite seasonal variations, if any, shown by his analysis of past years.

The difficult question, however, is whether "other things" will be equal. What are these "other things"? They fall under two heads, first those things directly affecting the particular product in relation to competitive products; and secondly the purchasing power of potential buyers. Under the first heading will come the quality and attractiveness of the product, its price and its advertising and so on, in relation to competitive products. Under this heading the manufacturer must allow for any improvements in his product or changes in his price, any increase or decrease in the attractiveness of his advertising or that of his competitors, any changes in management or methods, and so on. This must be a matter largely of individual judgment. There still remains the second question of how far the consumer's purchasing power in 1928 (depending upon the general level of business prosperity) will compare with that of 1927; and this is the true field of business forecasting.

Now, as is well known, general business appears to follow a definite cycle of variations; a rhythmical movement from depression, through recovery, to prosperity and boom, and then

through slump back to depression. The key to our manufacturer's immediate problem is likely, therefore, to be found by discovery of the probable course of the "business cycle" during the period in question.

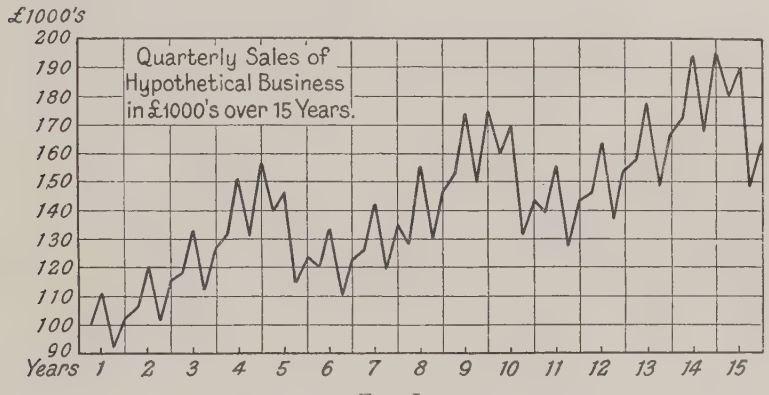


FIG. I.

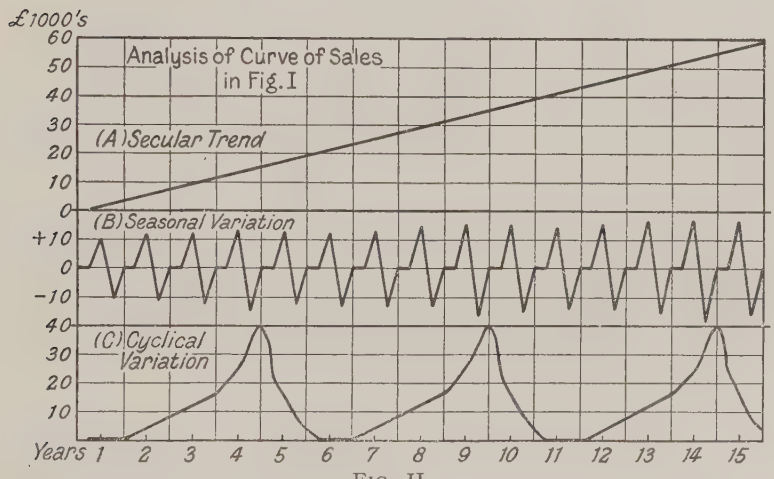


FIG. II.

The two accompanying charts* will illustrate the foregoing. The first shows quarterly sales of a hypothetical business in money over a period of fifteen years. The second shows an analysis of the figures into their three component parts, namely, the secular trend of the business, the seasonal variations, and the cyclical variation. In these hypothetical figures the cyclical variation is shown for simplicity as perfectly regular. In practice, however, there is no regular or typical cycle. The problem is, therefore, to forecast the nature and extent of the probable cyclical change during the coming year.

* Taken from "Business Forecasting and its Practical Application," by the present writer, published by Sir Isaac Pitman & Sons, Ltd., and reproduced here by their kind permission.

TWO METHODS OF APPROACH.

There are two distinct but closely related ways of approaching the problem. The first is that of a general analysis of the present economic situation. This is, however, a very difficult proposition, because not only are the available statistics inadequate, but also there is no general agreement as to the *causes* of cyclical variations; and if we do not know the causes of past variations, it is a hazardous matter to forecast the results of causes still operating. Such an analysis is important. Conclusions arrived at in this way are likely to be more dependable than hasty judgment or ready acceptance of the crowd view. Furthermore, they form a useful check on conclusions reached by other methods. The method of general analysis alone, however, is not likely to be quite dependable.

The second line of approach is to attempt to forecast future developments in the light of what happened in the past. In this case the question asked is not *why* trade followed certain lines on past occasions, but rather the order in which events in fact occurred, light in this way being thrown on the order in which they will occur in the future. For the purpose of this paper attention will be centred on the work, along these lines, of the Harvard Committee on Economic Research.

HARVARD METHODS OF FORECASTING.

The economists associated with Harvard University decided to take the trade cycle for granted for the moment, and to seek to discover signs indicating in advance the coming of the next phase of the cycle. Using the most advanced statistical technique they arrived at certain very interesting conclusions.

To put the matter as briefly as possible, they found that while business as a whole moves in cyclical fashion, some business indices (for certain reasons) move before others. If, therefore, statistics bearing on different aspects of business are separated under certain distinct heads, light will be thrown on future movements. In particular, if suitable index figures are constructed to represent:—

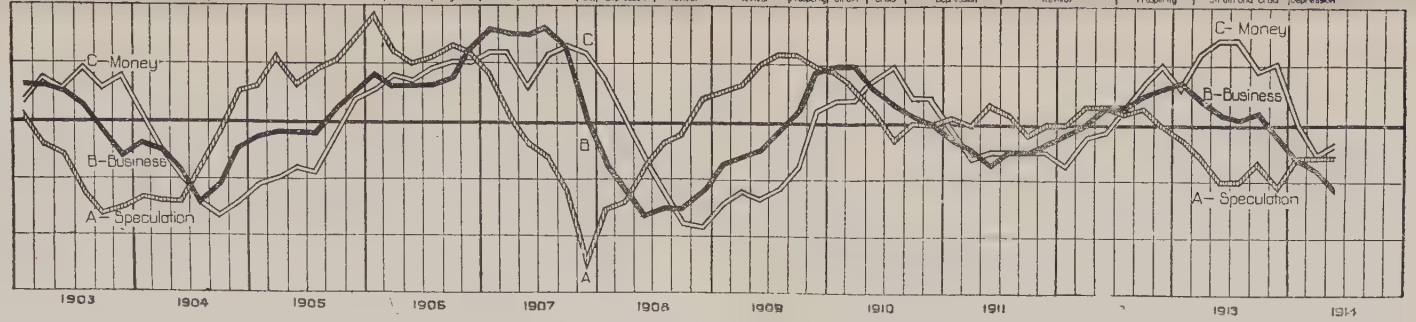
1. Speculation,
2. Business, and
3. Money,

the first will tend to move in advance of the second, and the second in advance of the third, and the third in turn (in the next following cycle) in advance of the first. It will be recognized that, if such a movement can be relied upon, it is of great importance to the business man, because by watching the movements of a suitable "speculative index" he may get light on coming changes in general business. After much investigation, the Harvard Committee on Economic Research ultimately selected, therefore, three main indices, representing:—

(A) Speculation, based on the prices of industrial stocks, railroad stocks and railroad bonds, and on town clearings at New York banks.

(B) Business, based on commodity prices, pig iron production, and country clearings; and

(C) Money, based on rates on four to six months' bills and on 60 to 90 days' commercial paper and loans and deposits at New York Clearing Banks.



CURVE A—SPECULATION
New York City bank clearings, prices of securities, averaged.

CURVE C—BUSINESS
Wholesale commodity prices, bank clearings outside of New York City, pig-iron production averaged.

CURVE C—MONEY
Interest rates on commercial paper, loans, and deposits of New York City banks, averaged.

FIG. III.

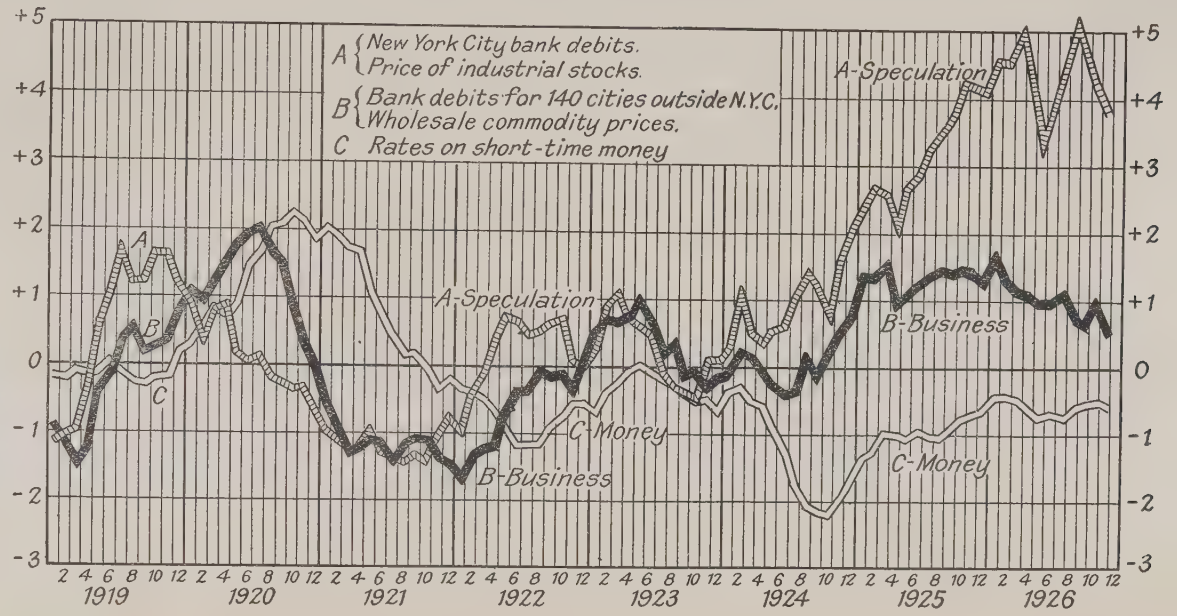


FIG. IV.

HARVARD MONTHLY INDEX CHART OF POST-WAR U.S. CONDITIONS.

Charts reproduced by permission of Harvard Committee of Economic Research (The year 1919 is added from an earlier chart.)

The accompanying specimen chart shows the resulting Index figures in relation to the U.S.A. for the period 1903–14. The claim made is that in every case a major rise or fall in business has been preceded, *broadly speaking*, by a rise or fall in the speculative curve; and in the same way, a rise or fall in money, by a rise or fall in business. These changes do not occur at a precise fixed interval, but generally speaking *major changes* in (A) have been found to occur some four to six months before corresponding changes in (B), and in (B) some six months before those in (C). An examination of the chart will show this and will also bring out one further important point to which Harvard economists attach first importance, namely, that the movements of the speculative and money indices are particularly significant when they are in opposite directions; that is to say, when Speculation is rising at a time when money rates are falling, or *vice versa*. It is clear that, over the period covered, major changes could have been safely forecast. It is equally clear, however, that this method does not provide any automatic guide to every short-period change.

The reader can test this for himself by passing a sheet of paper slowly to the right over the chart and endeavouring to forecast changes for, say, six months ahead. The same results will be found by examination of the Harvard charts of United Kingdom pre-war conditions, reproduction of which is precluded here by consideration of space.

POST-WAR CONDITIONS.

Even, therefore, under normal pre-war conditions one of the most advanced systems of forecasting could not give purely automatic results. It is clear that the "barometer" would have to be interpreted in the light of the surrounding general conditions and after allowance for known disturbing factors. It will be clear, therefore, that under post-war conditions any automatic forecasting has been even more out of the question. Not only have very great disturbing factors been introduced as a result of the war and the political conditions arising out of it, but the whole problem has been further complicated by the rapid changes in price-level and in values. These last changes have not only greatly upset actual production and trade, but also the standards of measurement of that production and trade. A fall in nominal prices of 50 per cent., as a result of special financial conditions, may be as disconcerting to the business forecaster as an increase in a foot rule from 12 to 24 inches to the engineer! Volume of actual production may seem to have halved and yet not have altered at all. Nevertheless, even under these conditions the method of forecasting we have been considering definitely and clearly forecast in the U.S.A. the boom of 1919–20, the slump of 1920–21, and the recovery of 1922–23, in each case some months beforehand, as will be seen from the chart of post-war U.S. conditions (Fig. IV). The value of such an indication of changes, directly in conflict as it was (in the first two cases at any rate) with the whole anticipations of the business world, can be imagined. The same was true of the "barometer" of British post-war conditions prepared by the London-Cambridge Economic

Service (a subscription service commenced after the war having its headquarters at the London School of Economics) based upon similar principles to those of Harvard and working in conjunction with Harvard. In this case, however, the indications were less definite, partly as a result of the much less adequate British statistics available, partly because the post-war disturbances were far more severely felt in the United Kingdom than in the U.S.A., and partly, it would seem, because of a less satisfactory form of presentation.

The same minor divergencies, however, occur as before the war in both cases, but accompanied by more abnormal departures. I have considered whether, in the limits of time and space permitted to me in this paper, I could attempt in detail to reconcile the movements of the post-war indices in the two countries with the general forecasting theory, but have come to the conclusion that any attempt to do so in such a compressed form would be unsatisfactory and possibly misleading. I have already compressed the matter as far as can be safely done in the book previously referred to. Suffice it to say that, in my opinion, when allowance is made for the quasi-inflation which has taken place in the U.S.A. in recent years as a result of the change-over from the position of a debtor to a creditor nation, the great influx of gold there, the great development of instalment selling and other factors, and, on the other hand, the deflation we have experienced for years in the United Kingdom, nothing which has occurred has so far discredited the fundamental Harvard theories.

SUMMARY.

I would, therefore, summarize the position as follows:—

1. No means of forecasting general business has yet been devised which will give dependable warning of every future change in business even under "normal" conditions.

2. The most scientific theories may be upset by abnormal conditions.

3. If proper advantage is to be got from forecasting methods in their present pioneer stage, they should be considered in conjunction with an analysis of existing general economic and other tendencies, by someone with the necessary special training, knowledge, and judgment.

4. However, even business men with no particular knowledge of economics or statistics, may reasonably expect existing forecasting services to give warning of *major* changes in business conditions and to help considerably in estimating the course of business for some months ahead in intermediate periods. Skilled users will, of course, be able to derive considerably greater help from these "barometers."

Business forecasting, even at its present stage, has therefore something important to offer to the business man. A reasoned forecast arrived at in the light of current knowledge and with a due appreciation of the underlying cyclical movements, is likely to have a much smaller margin of error than a snap judgment or the view of the crowd.

Our manufacturer, by following these methods, should therefore

be helped in arriving at his basic estimate of sales in 1928. The same fundamental information will, of course, assist him in his estimate of prices of raw materials and therefore in his purchasing policy. These things, in turn, will guide him on the financial and other sides of the business.

I should add that it is only because of limitations of space, and not because of any lack of appreciation of their importance that I have made no reference here to the British and American forecasting agencies other than London-Cambridge and Harvard.

In the absence of Mr. Wallace, Major Urwick presented the paper.

The following took part in the discussion:—Mr. E. T. Elbourne, A.M.I.Mech.E.; Mr. J. G. Pritchard; and Mr. F. J. du Toit, B.A.

SECTIONAL MEETING (B).

PATENT CLASSIFICATION: STATEMENT CONCERNING THE BRITISH PATENT OFFICE.

By A. R. WRIGHT, I.S.O., F.S.A.
(Late Assistant Comptroller, The Patent Office).

In many matters British practice is a growth with its roots in the past. Patent classification is no exception, for it has been to a large extent controlled, and perhaps even a little contorted in its development, by the manner of its origin. It may be useful, therefore, to set out very briefly the history of British publications designed to aid public search in connexion with Patent Specifications, which publications preceded by many years the institution of an official search as to the novelty of inventions for which protection is sought.

Under the guidance of Mr. Bennet Woodcroft (1803-79), who was appointed in 1852 the Superintendent of the Specifications for the duties of classification, indexing, printing, and publishing, and served from 1864 to 1876 as Clerk to the Commissioners of Patents, the British Patent Office was the first to print Specifications *in extenso* in separate numbers (a work completed up to date in the years 1853 to 1858),* and so assisted inventors and the public to acquaint themselves with the contents without a tedious and difficult investigation in the three public offices in any one of which at that time the documents of a Patent might be enrolled. A library was established in 1855, and important additional assistance given to public search by the issue from 1857 onwards of unillustrated abridgments of the printed Specifications in volumes mostly corresponding each to a particular industry. These volumes were prepared by abridgers outside the Patent Office, each in charge of one or more subjects, such as Weaving and Farriery. The abridger was paid a fixed sum for each abridgment accepted by the Office, and himself searched the official indexes then existing to form a list of Specifications to be abridged. The whole area of invention was not covered by the abridgers, but there was a loose arrangement amongst them by which they informed one another of matter of interest to an abridger which might be discovered by a colleague in the course of that colleague's own work. For example, the abridger for the volume "Acids, Alkalies, Oxides, and Salts," if he found and abridged a description of a lime-kiln, notified the abridger for the volume "Preparation and Combustion of Fuel," who then prepared an abridgment for the latter volume, if he had not already done so. Some 176 unillustrated volumes were printed under this scheme.

Under the Patents &c. Act of 1883 an official examining

* France started printing in 1811, but the Specifications were issued in volumes and only after the expiry of the respective Patents; the issue in separate numbers of all Patents did not begin in that country until 1902.

staff was instituted, and prepared illustrated abridgments of current Specifications, which were published in a weekly official journal. This staff was directed to take up also the task of preparing illustrated abridgments to continue and complete the series of unillustrated volumes already published. The first step necessary was obviously the preparation of a comprehensive scheme covering all the subject-matter of the Specifications dealt with. Index headings were formed for the treatment of the current and earlier Specifications as they were actually abridged, and these headings were collated and built up into a single "Abridgment Class and Index Key," and were also grouped into 146 abridgment classes, for which indexed volumes of illustrated abridgments were then issued. As the unillustrated volumes previously published had, for the time being, to be utilized as part of the means of search available to the public, the new scheme of classes was influenced by the contents of the earlier unillustrated volumes and by the idea of correspondence of some of the volumes with the range of individual industries. As another consequence, a number of index headings, with their corresponding abridgments, were repeated in two, or even occasionally in three, classes.

It should be pointed out that public searches fall into two main categories: one those made by an inventor or a trade rival who is inquiring as to the novelty of an invention as a whole, and perhaps also of the separate features of it; and the other those made by a manufacturer or member of the public who is seeking to learn, not whether a particular apparatus or process in his mind is novel, but what apparatus and processes in general have already been invented by others and can be adopted, or must be avoided as protected by Patents, in some industry or trade or for some purpose in which the searcher is interested. The original abridgment volumes were principally suited to the latter category of searches, although they could also be used for the former. To some degree the two searches are incompatible, and the system found most suitable for one of them is not necessarily that best adapted for the other.

It should be borne in mind that there is an important difference between library cataloguing and Patent classification. The librarian does not usually make any pretension, except in special bibliographies, to deal with small portions of the contents of individual books. A chapter on the proverbial sayings of an African tribe, in a traveller's account of a visit to that tribe and perhaps several others, will probably not appear in a library catalogue under a heading "proverbs," but it should appear in a bibliography of works on proverbs. In preparing a Specification as material for search as regards the novelty of an idea embodied in an apparatus or process it is, of course, necessary to go beyond the title and general contents of the Specification, and beyond the stated application of the invention and the matter claimed as new by the inventor, and to deal exhaustively with all matters contained in the description. The work of indexing and abridging a Specification is therefore analogous to that of the bibliographer and not to that of the cataloguer, and index entries and abridgments will be made which are possibly not of much

interest to the person whose concern is confined to his own industry or trade.

When the duty of making an official search as regards novelty was laid upon the examiners by the Act of 1902, and the search was actually started in 1905, search files covering the contents of 375,442 Specifications had to be prepared within a very limited time, and were necessarily based upon the Key and indexes and abridgments already available to the public. The resources at the disposal of the Office were not sufficient to enable it to provide means for public search in addition to and distinct from those for official search, and it was desired not to withdraw from the public any of the information which had hitherto been given. It was necessary, however, to amend the Key so as to adapt it for the official search, both by greatly increasing the amount of sub-division and by such modifications as discontinuing the repetition of index headings and sub-headings in more than one class. The main difference between the two means for search—those suitable for the public and those for official use—is that between "indexing" and "classification"; in the former a definite bit of subject-matter in a Specification is repeated in all places where it might be of interest, while in the latter it is put in one place only, namely, in that in which search for it should be made. To attempt repetition of the same matter in several search files is not merely wasteful, but likely to result in faulty searches.

The general question of the best way of indicating the scope of index or search divisions naturally came under review, but it was thought best not to adopt the plan of an elaborate definition of each division. The object of an inventor being to produce something new, it appears that a precise definition must quickly get out of date, and will both embarrass the examiner in continuing to keep like matter together in his search files and confuse the public searcher by failure to convey in terms exactly the scope which was in the examiner's mind at the moment when the definition was drawn up. It was endeavoured, therefore, to keep the wording of each heading in brief and simple terms, and to account under it for all matter which could reasonably be expected there, either by a sub-division or by a "cross-reference," or note, which stated that particular matter would be found under a particular other heading. A heading was thus defined by the sub-divisions and cross-references under it, and not by a lengthy formula. Each heading as a whole was allotted to a single class, and new matter could generally be provided for on the index sheet in an existing class and without the formation of a new main heading.

Each Specification continued to be represented by an "index sheet," on which the examiner set out all the existing headings, sub-headings, cross-references, &c., under which the Specification fell, and accounted for it under each of them, making also any new provisions that were required. This index sheet was used both for the preparation of the indexes issued to the public and of the "search cards" used for the official search. These cards are of linen-faced paper, 15½ inches by 12 inches, that size being

chosen so as to allow the pasting on the front face of the printed Specification, the largest drawings, the abridgment, and other information, and the employment of a system of special clips which will be illustrated by my friend, Mr. Gomme.

At a later stage the classes were sub-divided, and became 271 in number (with now about 28,800 index divisions and search files), the opportunity being taken to collect together analogous matter from different old classes and to make other improvements in scope.

It may be of interest to remark here that it was obviously desirable for the purpose of brief reference on search cabinets and of registration to use pressmarks to designate the different search files, whether the search file was represented by separate search cards, or only by clips placed on particular cards of another file. Such a pressmark was given to every file, although it was not thought desirable to encumber with them the printed copies of the "Key" sold to the public, who would not derive any advantage from the information. The Dewey system of decimal notation, then popular, was considered for the pressmarking, but its limitation to ten divisions at each stage made it unsuitable, and a notation was adopted which employs alternately numerals and letters of the alphabet. Thus, in Class 108 (ii), *Road vehicles, Underframing &c of* D2a1a1 represents the index provision—

(*D*) Road-vehicle undercarriages—

(2) spring suspensions—

(*a*) bodies and underframes on axles, for supporting—

(1) bearing-springs acting directly between axles and supported members—

(*a*) laminated and plate springs, comprising—

(1) combined with auxiliary and rebound springs and springs of other types.

The claims of a Specification, in which an inventor sets out what he regards as the features of novelty of his invention, may require search in the files of more than one class, and it is therefore necessary to determine whether all the searches on one Specification should be made by the examiner to whom it is originally allotted, or whether the Specification should be passed from examiner to examiner, so that the search in each class is made by the expert in charge of it. The second course was adopted (the original examiner stating on a "search form" the scope of the search wanted in each class), and experience has justified it, as giving uniformity in the searches in the same class, and greater completeness in the total search, without any serious loss of time.

The contents of all files which have passed the experimental stage are communicated to the public in the printed indexes, and the "Key" to the classification, and the annual indexes, have continued to be issued not sub-divided into classes, but in a single alphabetical arrangement of all the headings and cross-references—an arrangement the advantages of which it is not

necessary to labour before this Conference. It has been urged as an objection to alphabetical arrangements that they are a bar to future adoption of an international classification, and various attempts have been made at a "natural" or logical scheme of classes. This is not the time or place to discuss these attempts, sometimes rather humorous, but it may be noted that the scope of classes and index headings is quite independent of the particular letter of the alphabet with which their titles begin, and that a corresponding class or heading with identical scope could exist in different national Patent Offices even if the first letter of the translated title indicating that scope ranged from A to Z in the different languages.

Patent classification cannot fairly be criticized in the light of text-books. A theoretical division of a subject, admirably logical and complete, may have very little to commend it as a practical scheme for search files. The current of invention in the subject may nowadays, for one reason or another, flow strongly through obscure by-waters and not down the main channel, and for speedy search a minute sub-division upon somewhat artificial lines may be required for a small part of the subject, while a large range of the subject can safely be left unsub-divided, being derelict as regards recent invention. It has been proposed in some schemes of Patent classification, official and unofficial, to divide all subjects of invention on rigidly uniform lines, and several advantages have been alleged to result. It is probable, however, that there are much greater advantages in a scheme which gives play to the individual idiosyncrasies, which are many, of both subjects and examiners. Accordingly it has not been attempted in the British classification to carry parallelism in separate headings very far. The main basis of classification has been the structure of an apparatus and the essential characteristics of a process, the purpose or application of the apparatus or process being introduced at the further point where it modifies the structure or characteristics. It has been found convenient to make separate headings, and sometimes classes, for products and the special methods of making them independent of particular machines, and for the apparatus for making them [*e.g.* Class 17 (i), Boots and shoes, Apparatus for making and repairing; and Class 17 (ii), Boots and Shoes, Construction of]. In sub-dividing a heading for an apparatus, separate groups of divisions have usually been formed for "kinds or types" involving a general arrangement or design of the apparatus as a whole, and for details which may be applicable to more than one of the kinds or types, or are not limited in their application. The kinds or types may themselves be similarly sub-divided into sub-types and details peculiar to or applied to the main type. Matter of vague and general character, and odd examples of an exceptional or obsolete character, are collected under a "miscellaneous" sub-division, which may occur under the main heading and also under any sub-division of it. As a safeguard against the temptation to deposit under "miscellaneous" matter which ought more properly to be dealt with elsewhere, an index entry must be made descriptive of the subject matter, and is published under "mis-

cellaneous" in the official indexes, which thus contain a description in terms of all matter indexed.

A somewhat similar general plan is followed in sub-dividing a heading for a process. How far such general lines may be usefully developed further is a matter for the future.

In conclusion, it is suggested that Patent classification has special conditions, and should not be judged by ordinary standards. It must be worked by a large number of men, and for success should be simple and not too rigid in character, though even a system unsound in theory may yield good results if worked with goodwill and intelligence. The classifier of Patents has more difficulties than his fellows with the crank, who is very active as an inventor, and has other severe and peculiar trials. He is very human in his craving for sympathy, and will be duly grateful for any helpful hints which you can give him.

Mr. A. R. WRIGHT, in introducing his paper, said:—Librarians have ordinarily only a single copy of each Patent Specification, but that Specification may have several different items of subject matter which are of interest under different index headings. The official classification requires in many cases, however, duplicate copies of a Specification, and cannot be applied *in toto* in a public library. Probably the best library system is to arrange the single set of Specifications in strict numerical order and in years, putting with each year the official indexes for that year so that a searcher may turn up readily all the Specifications indexed under the heading he is using. It may also be possible, for quicker reference, to distinguish Specifications indexed under a heading of special local interest by means of the clips explained by Mr. Gomme.

There is nevertheless one system of classification without any repetition which may have an application within narrow limits for library use. Let us suppose that the headings under which Specifications are to be classified are A, B, C, D, ..., Z, the headings A, B, C, &c., being not in the alphabetical order of their wording but in the order of the probable comparative number of Specifications falling under them—A being the heading having the largest number of Specifications, B the next, and so on. The Specifications can then be arranged in files according to their contents, as follows, successive files containing Specifications having *only the matter indicated and nothing else*:—

A
A + B
A + B + C
A + B + C + D
A + B + C + D + E

A + B + D
A + B + D + E

A + C
A + C + D

A + Z

Similarly B, C, &c., are exhaustively treated.

It is obvious that if the number of Specifications is great, and the number of headings, A, B, C, &c., necessary is also great, the scheme involves such a multiplicity and complexity of files as not to be practicable. Nevertheless, on a small scale and for a simple subject such as "Alloys," the above scheme may be useful in a modified form.

Suppose search is to be made under "Alloys" in the official Key for an iron-chromium alloy which may or may not contain tungsten or titanium, the following index divisions will be found:—

Alloys—
alloys containing—
chromium.
iron. [and tungsten.
alloys containing iron and steel and also chromium, but *not* titanium
titanium.
tungsten, but *not* titanium.

If A is taken to stand for iron and steel, B for chromium, C for titanium, and D for tungsten, it will be seen that the above divisions correspond to

A
B
A + B
A + B + C + D
A + B + D

which will be seen to be a selection from the exhaustive list of possible files set out in the more detailed scheme above, and to cover the search wanted. The index divisions A and B, however, include not only all Specifications containing A or B with unspecified other constituents *only*, but also all the Specifications in other divisions clipped as containing A or B as a constituent of the definite alloy. Search can be made under A, therefore, for all alloys containing chromium, or a particular percentage of chromium, and under a single definite file for a particular alloy, such as A + B + D for all alloys containing iron and steel, chromium, and tungsten *only*.

The pressmarks or file marks employed, consisting of alternate letters and numerals, were, so far as I know, novel when first employed for official purposes a quarter of a century ago. They have considerable advantages over the decimal system, and dispense with the artificial and somewhat clumsy devices usually found necessary to evade the limitation to ten divisions at each step. Alternate divisions bear letters of the alphabet, and if the subdivisions of any step exceed twenty-six the letter Z is made "not otherwise provided for," and the extra subdivisions are made number divisions of Z. The alternate number subdivisions can, of course, be multiplied to any extent, and the total pressmark provides for any conceivable minuteness of subdivision and yet remains quite clear as regards the successive steps.

As the file marks could not be employed outside the Patent Office without the use of many duplicate copies of Specifications at a prohibitive expense, and as, moreover, the public are given in terms the subdivisions used and can employ them so far as and with whatever notation they please, there seems no advantage in publishing in the Key the actual file mark for each file, while publication would tend to stereotype the marks inconveniently.

PUBLICATION OF THE BRITISH CLASSIFICATION AND INDEXES, WITH SPECIAL REFERENCE TO THE EXTENT TO WHICH FACILITIES ARE MADE AVAILABLE TO THE PUBLIC.

By ALLAN GOMME (Librarian, The Patent Office).

The object of this contribution to the discussion of patent classification is to examine the various publications of the British Patent Office, and to ascertain how far these provide adequate material for an expeditious and comprehensive search by the public, and to what extent such a search would be at all comparable with that which is undertaken by the Examining Staff of the Office in reporting on the question of novelty under Sections 7 and 8 of the Patents Acts.

We are not here concerned with the actual method obtaining in the Patent Office of arranging and filing the records for search purposes, except in one particular which is dealt with later. That system has been built up to suit the special needs of the Office, and it or another, perhaps equally good, could be adopted at once by any research institution that could afford the space necessary for its installation, *provided that the records on which the Examiners' files have been based were fully available to it.* Nor shall we worry about the theories of classification or with any schemes that might or should have been adopted in preference to the existing one. Attention will be confined to the question raised by the above proviso.

It must be realized at the outset that we have only to consider patent specifications dated within the last fifty years, for those of earlier date will not by themselves invalidate a patent granted to-day. The early indexes and abridgments, admittedly imperfect, will not therefore come under consideration.

The search material to be discussed is

(*a*) the classification scheme itself;

(*b*) subject indexes, showing the allotment of the patent specifications to the various headings of the classification.

(*a*) The classification scheme of the Patent Office has been published from time to time as "The Abridgment Class and Index Key," the last edition having appeared in 1910. Revisions of the scheme and additional classes and sub-divisions which have been made since that date have been issued periodically in supplements to the "Quarterly Subject-Matter Index," but the extensive nature of these revisions render this form of publication very difficult to consult, and far too cumbrous for easy reference. The necessity for a revised edition of the complete "Key" has, however, to a certain extent been met by the publication firstly of the "Fifty Years Subject-Matter Index," which was issued at intervals during the years 1913 to 1924, and secondly of the current abridgment volumes and the subject-matter indexes. These publications will be described in greater detail later on, and it is suffi-

cient to state here that they show the classification scheme in the revised state as it exists to-day, the "Fifty Years Index" giving the whole of the classification headings as they stood at the date of publication, and the abridgment volumes and indexes incorporating all additions to the present time.

It may be noted here that the United States Office is now issuing its classification schedule in loose-leaf form, new and revised sheets containing all amendments and additions being supplied to subscribers as and when the occasion arises. The information to the public is in this way kept commendably up to date.

(*b*) The subject-indexes published by the Office are :—

(1) The Fifty Years Subject-Matter Index,

(2) The Class Abridgment Volumes,

(3) The Quarterly and Annual Subject-Matter Indexes,

and (4) in the weekly Official Journal.

The first of these forms the basis for all subject-matter searches. It was issued in parts, one for each of the 271 classes of the classification, between the years 1913 and 1924, and shows the allotments of all specifications for the fifty years from 1861 to 1910 to the various headings of the classification, in the form in which these stood at the dates of the publication of the various classes. The series formed, in fact, at the time of its compilation, an exact register and check list of the Examiners' files at the Patent Office for all specifications up to 1910.

The abridgment volumes are also issued in class form, each volume covering a definite period, usually now five years, and containing abridgments of all specifications accepted during the period that are allotted to its particular class. They have been issued for all specifications from 1855, but so far as the indexes are concerned the earlier volumes are now superseded by the "Fifty Years Index," and the only ones of which note need be taken are the volumes covering the periods 1909-1915, 1916-1920, and 1921-1925, the last of which is still in course of publication. Each volume contains a full subject-matter index for the period it covers, on the basis of the classification headings as existing at the date of publication, all references under the separate headings being included and "nil" entries appearing against those headings to which there has been no allotment during the period. These volumes, therefore, give five-yearly supplements to the "Fifty Years Index," making this part of the indexing complete, at the present moment, down to the year 1920.

The Annual and Quarterly Subject-Matter Indexes in their turn supplement the Abridgment Volumes, by showing the allotment of all specifications accepted during the period to which they relate, and completing the indexing down to within a few months of the present time. They include all headings, new and old, to which specifications have been allotted during their period, but they do not contain references or "nil" entries.

It is important to note here two features which differentiate the British indexes from the similar publications of Germany and

the United States. In these latter countries the indexes are in the form of class lists, in which the only indication of the classes and sub-divisions is given by the notation or press marks used in the Office,* whereas the British publications in every case give the full wording of the class and sub-heading. The indexes, therefore, as already indicated, not only show the specifications allotted to the different headings, but form supplements to the Classification Key.

The second differentiating feature is of greater weight. In the British practice, each specification is fully indexed (not merely classified), and is allotted both in the Examiners' files *and in the publications* to every class and every sub-division within the class where any part of it would be of interest, irrespective of whether the particular subject-matter is actually claimed as part of the invention or not, the average allotment being about two and a-half entries per specification. In the United States and Germany this is not the case, only one allotment being there allowed for each specification. The United States classification is a library classification, with its superior and inferior headings and numerous repeat notes, and a specification is allotted to the heading that will most nearly contain the whole subject. If a specification, for instance, of an invention for a certain electrical machine includes a detail, say, a bearing, of special design, the specification would receive one official allotment and one only, namely, that one relevant to the complete machine, and no indication would appear in the published indexes that the specification contained anything of interest to "bearings," though, I believe, in actual practice one or more duplicate search cards would be placed in the Examiners' files relating to that subject. Under the British system, in such a case, a specific entry would be made under the appropriate division or divisions of class "Bearings," and, further, an additional abridgment of the relevant part of the specification would be prepared for the abridgment volume appertaining to that class. Every sub-division, in fact, down to the most minute is designed to be really exclusive, and the allotments under it comprise the whole corpus of patent material that is regarded as belonging to that specific heading. There are no "see also" references.

It will be evident that this indexing practice of the British Office affords the means not only of giving the public an exact key to the Examiners' files, but of going some distance in the provision of facilities for a complete search, the required condition for success in this direction being that the published indexes be kept up to date in all respects. Whether or not they are so maintained is a question, then, that deserves some consideration, and this can perhaps best be given by means of examples. Three will be taken.

In the first place we have the case of a classification heading which was in use at the time when the "Fifty Years Index" of

* Germany also publishes a list showing the class allotment of the specifications arranged in numerical order, a useful work of reference. Our numerically arranged abridgments in the Official Journal give the main Class allotments, but not the sub-divisions.

the class was published, and which has not been modified in scope or sub-divided since. The "Fifty Years Index" will here give all allotments to that heading prior to 1911, and the abridgment volumes and indexes the whole of the later allotments to date. For such cases, therefore, and they form by far the largest proportion of the total number of classification headings, the published indexes do supply an accurate key to the Examiners' files, and the public have immediate access to the whole of the available material.

The second case is that in which, although a particular heading has been brought into use since the publication of the "Fifty Years Index," the field that it covers is included under another heading in that work, which is comparatively obvious and can be found without difficulty. Such, for instance, is the case where a previous heading has been recently divided into two or more subdivisions. A search under one of these new sub-headings in the later indexes would lead backwards inevitably to the wider heading. In these cases, then, which are fairly numerous, although the published indexes do not provide an exact register of the Examiners' files (which would, of course, have been rearranged on the latest scheme), yet the finding of the required material would be fairly straightforward, and no great hardship is involved.

The third case, however, is not so simple. Here we have a new heading bringing out specifically a subject which has only come into prominence, or of which the real nature has only been discovered, quite recently. If, as usually happens in such cases, there is a number of specifications on the same subject belonging to the earlier period, these are, as a rule, only to be found in some much wider heading, where they lie undefined and buried, for lack of recognition at the proper time. These early records would probably be extremely difficult to trace, and might necessitate quite a prolonged search through a great deal of mostly irrelevant material. "Vitamins" occurs to me as an example of such a case.

In these instances, the published indexes would in no way correspond to the Examiners' files (which would have been at once revised to incorporate all the old material sorted out from other headings), and would be of little help to the public for any but the very latest period, and a very real grievance may be admitted, which is not at all mitigated by the fact that such cases are but few. Actual mistakes in classifying, which we may suppost occasionally occur, come into the same category; for it is clear that such errors could never be picked up by the public unless there be revision from time to time of the published indexes.

The problem is mainly a financial one, for the constant changes that must obviously take place and the necessity of frequent revision and reallotment of early cases to fit later schemes really require a continued succession of new consolidated indexes to meet the changed conditions.

It is one that is not confined to this country. The American office may not be greatly troubled. It provides a duplicate search file for the public at Washington, and will furnish for a small fee

a list of the entries allotted to any division of the classification, but the only class lists it actually publishes are the weekly ones that appear in the "Official Gazette." These are not consolidated, and the question of revision as new sub-divisions are made does not therefore arise. But the Germans are faced with the same difficulty as ourselves. A drastic revision of their classification* came into force at the beginning of 1926, to which the class lists published up to that time are quite inapplicable. They are, however, considering the publication of the revised allotments, and the question there, as here, being mainly a financial one, have offered to issue them if a sufficient number of subscribers can be obtained.

The completion of a search to date from the issue of the latest "Quarterly Subject-Matter Index," a period of from three to six months, has also to be allowed for. The available material consists only of the unclassified abridgments and the weekly indexes in the Official Journal, but the question, though important, is not perhaps of such moment as to call for special comment here.

Such is, it is believed, a fair and accurate account of the present position with respect to the Patent Office publications. To sum up, it appears that the British system is one that is able to give the public reasonable access to the contents of the patent records, but that it does not, at any rate at the moment, satisfy this need completely, because the public are not kept fully informed of the revisions of the published allotments.

I want now to deal with a particular feature of the Patent Office Examiners' filing system. My excuse for doing so is an article which appeared in an American journal in which the following passage occurs :—†

> "The Examiner has in his drawers copies of British patents for the last fifty years mounted on cards . . . and divided into classes according to the official classification. In addition to this, each class is minutely sub-divided by the Examiner . . . by placing on the cards metal clips."

This paragraph seems to imply that the sub-division by clips is additional to the official classification as published, and it has to my knowledge been so interpreted. This is, however, not the case. I propose, therefore, and also because the system has some interest in itself, to describe shortly the use of these clips.

The clips are placed in various positions on the top edges of the search cards, which are visible when the drawer containing them is withdrawn for a search to be made, and are employed for two purposes :—

(1) For tentative and experimental schemes for the revision of the classification.

(2) For distinguishing cards belonging to several sub-divisions which, for reasons of economy of space, are grouped together in the same file.

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* In the Patent Office Library, where we maintain a classified set of the German specifications, we have been compelled, pending the receipt of revised class lists, to arrange all specifications allotted on the new scheme in a separate series on the shelves, quite distinct from the main set.

† "British Patent Office Procedure," by Karl Fenning ("Journal of the Patent Office Society," Vol. VII, 1925, page 519).

The utility of the first plan is obvious, as it enables experiments to be made in sub-division without disarranging the existing order of the cards, but such use is, of course, entirely temporary and need not be further described.

The second use is the important one, and the one that is referred to in the article mentioned above. To make the matter clear I will take an example from actual practice.

The ordinary door-latch, so common in English houses, is allotted a heading in Class 44, Fastenings, and is divided into fifteen sub-divisions as follows :—

Latches, sliding—
1 operated by knob on bolt.
operated by lever one end of which forms the handle—
2 lever acting directly on bolt.
3 lever acting indirectly on bolt.
operated by ordinary follower on handle spindle—
4 follower acting directly on bolt.
5 follower acting through pivoted lever.
6 follower acting through means other than pivoted lever.
7 operated by sliding push and pull spindle.
8 bolt modified.
9 case or attaching means modified.
10 handles &c., arrangement and disposition of.
11 runner plate type.
12 spring or weight actuating mechanism modified.
13 with bolt engaging rack for sliding sashes.
14 with device for holding bolt in withdrawn position till door &c. is closed.
15 with means for preventing actuation other than keylock type.

The first seven of these sub-divisions, it will be noticed, deal with methods of operating the latch bolt, and the whole number of cards allotted to "sliding latches" are physically divided into seven corresponding groups with, of course, any repeats that may be required, the groups being arranged in sequence in the drawers of the search cabinets. The remaining eight divisions of the subject, however, deal with details common to all latches irrespective of the method of operation, and one or more may be applicable to some or all the cases in any of the groups. It would, of course, have been possible to arrange all these divisions also into separate physical groups by means of duplicate cards, but as practically every card would have had to be repeated, some of them three or four or even more times, the space required for the extra files would have been very considerable, and such a system extended throughout the whole classification would have become impossible. Instead of this, the top edges of all the cards throughout the first seven groups are divided into eight parts, each one corresponding to one of the divisions 8-15, and clips are placed on each card in all relevant positions. A search for a detail, therefore, *e.g.* the spring-actuating mechanism, would be undertaken by looking at all the cards that have that particular clip (the fifth) in all the groups 1—7.

This system is carried out throughout the whole of the Office files, though not always in so simple a manner as in the example

quoted, which has been designedly chosen to make the principle clear. In the more complex machines with which the Examiners have to deal—typewriters, for example—where many small details have to be brought out, the number of "clip" divisions to the group of cards may run to as many as twenty or more, and special means have been devised to enable such a large number to be indicated in the restricted space provided by the top edge of the card. Coloured clips have been adopted for this purpose. For twenty-four sub-divisions, for example, clips of three colours might be used—black, copper, and brass. The edge of the card would then be divided into twelve spaces, and black clips in these twelve positions would indicate respectively divisions 1—12, copper clips divisions 13—24, whilst brass clips in the same twelve positions would be used instead of the others on the card, when a combined allotment to both divisions 1 and 13, 2 and 14, 3 and 15, &c., had to be designated. Thus a search through the sub-division (4) would consist in consulting all those cards which have either a black clip or a brass one in position (4), the brass clip signifying that the case has an allotment to both divisions (4) and (16). In the same way a search in division (16) would necessitate looking at the cards having either a copper or a brass clip in the fourth position. The front of the clip when in position is in the form of a frame, providing a space in which the notation of the sub-division to which it relates is marked.

The use of these clips, besides economizing space, does in some cases actually facilitate a search by reducing the number of search-cards to be consulted. Thus a combination claim may be under investigation, in which the presence in conjunction of two or more elements is essential. If the class divisions containing these elements are represented by clips throughout one or a number of files, the search can be confined to those search-cards that carry all the clips in question, instead of being extended to all cases containing one only of the elements, as would be necessary were the different sub-divisions physically separated.

It is important to note that, although the actual cards for these "clip" sub-divisions are not physically separated in the Examiners' files, the headings for the sub-divisions in every case are all brought out in full in the "Key" to the classification and in the published Indexes, and all the allotments denoted by the clips are entered specifically to their respective headings, no distinction being made therein between clip and ordinary sub-division. Thus in the "Fifty Years Index" for Class 44, under the division sliding latches will be seen in addition to the headings for the operating groups 1—7 the headings for the detail divisions 8—15, and entries for all the specifications that have the corresponding clips in the Office files are given.

Other examples of the use and arrangement of the clip could be given, but the principle and the practice as regards publication are the same in all.

PATENT CLASSIFICATION: STATEMENT SUBMITTED BY REICHSPATENTAMT, GERMANY.

(For Translation see page 135.*)*

I. ZUR FRAGE BETREFFEND DIE GRUNDSÄTZE DER KLASSENEINTEILUNG.

In Deutschland ist für patentamtliche Zwecke das gesamte Gebiet der gewerblichen Technik in 89 Klassen eingeteilt. Jede Klasse behandelt ein in sich abgeschlossenes Gebiet, so dass die Reihenfolge der Klassen im Klassenverzeichnis ohne Bedeutung ist. Bei der Aufstellung des ersten Klassenverzeichnisses vor 50 Jahren wurde die alphabetische Ordnung gewählt, so dass das Verzeichnis für Klasse 1 mit A (Aufbereitung) beginnt und für Klasse 89 mit Z (Zucker) endet. Diese Einteilung hat sich bewährt und ist, von geringen Ausnahmen abgesehen, bis heute beibehalten worden.

Im Laufe des weiteren Ausbaues und der Entwicklung des Patentamts ergab sich mit dem allmählichen Anwachsen des Prüfungsstoffes das Bedürfnis zu weiterer sachlicher Teilung der einzelnen Klassengebiete. So entstanden vor etwa 30 Jahren rund 480 Unterklassen, die wiederum am Anfang dieses Jahrhunderts in *ca.* 8000 Gruppen unterteilt wurden.

Die Zerlegung der Klassen in Gruppen wurde nach den Vorschlägen der Fachbearbeiter der einzelnen Klassen vorgenommen undden Bedürfnissen der Neuheitsprüfung angepasst; sie ist das Ergebnis langjähriger Erfahrungen der beteiligten Prüfungsbeamten. Besondere einheitliche Vorschriften oder Richtlinien, nach denen der Stoff zu unterteilen ist, bestehen nicht. Die Gruppeneinteilung bildet nicht etwas unveränderlich Feststehendes, sie wird vielmehr den Fortschritten der Technik entsprechend ergänzt und verbessert und nach Bedarf, in der Regel in Abständen von 6 bis 8 Jahren, mit den inzwischen vorgenommenen Verbesserungen neu gedruckt.

Die letzte Auflage der Gruppeneinteilung der Patentklassen ist im Jahre 1926 erschienen und bildet zur Zeit die Grundlage für die Klassifizierung sowohl der Patentanmeldungen wie der Patentschriften. Ein Abdruck dieser Einteilung ist beigefügt.

Auf die Patentschriften wird die Klassen- und Gruppenzugehörigkeit aufgedruckt, und in der Auslegehalle des Patentamts ist eine nach Gruppen geordnete Sammlung aller deutschen Patentschriften zum Gebrauch für jedermann bereitgestellt.

II. ZUR FRAGE BETREFFEND DIE METHODE DER NEUHEITSPRÜFUNG.

Die Neuheitsprüfung der bei der "Annahmestelle" eingehenden und dort zu buchenden Patentanmeldungen erfolgt in den z. Z. 130 "Prüfungsstellen." Bevor die Anmeldungen dorthin gelangen, passieren sie die "Auszeichnungsstelle," wo einige ältere Beamte, die eine gute Übersicht über die Gruppeneinteilung der Patent-

klassen haben, damit beschäftigt sind, die Patentanmeldungen nach Klassen, Unterklassen usw. auszuzeichnen. In einigen Sondergebieten, z. B. Chemie und Elektrotechnik, wird die Auszeichnungsstelle durch die Fachbearbeiter der Gebiete bei der feineren Auszeichnung unterstützt. In gleicher Weise wie die Patentanmeldungen werden auch die ausländischen Patentschriften behandelt und dem zuständigen Prüfungsbeamten für die bei diesen befindlichen Literatursammlungen zugeleitet.

Den oben erwähnten Prüfungsstellen sind möglichst abgeschlossene Fachgebiete in Anlehnung an die Gruppeneinteilung der Patentamtsklassen zugewiesen. Besonderer Wert wird darauf gelegt, dass die Beamten der Prüfungsstellen möglichst lange in ihren Fachgebieten arbeiten, da in ihrer mit den reichhaltigen Erfahrungen immer mehr zunehmenden Sachkunde das wichtigste Hilfsmittel für die Neuheitsprüfung gesehen wird. Neben den Patentschriften stehen den Prüfern Handbüchereien, Kartotheken mit Fachstichworten, Sammlungen von photographischen Abzügen wichtiger Zeitschriftenstellen und dergleichen zur Verfügung. Es ist den Prüfern auch unbenommen, die Gruppeneinteilung für den inneren Dienst noch weiter auszubilden, wenn sie dadurch eine Erleichterung des Prüfungsgeschäfts herbeiführen können.

Die Patentschriften, die den Prüfungsstellen zur Prüfung der Anmeldung auf Neuheit dienen, werden in der Form, wie sie von den Patentbehörden ausgegeben werden, dem Vergleichstoff einverleibt. Sie werden, gruppenweise in Mappen zusammengefasst, in den Fächern von Regalen, die für diesen Zweck besonders ausgestaltet sind, liegend aufbewahrt, mit einem Pappdeckel bedeckt, der einen vor dem Fach herunterhängenden Ansatz mit der Klassen- und Gruppenbezeichnung, sowie Angabe des Ursprungslandes der Patentschriften trägt. Die Mappen haben auf der Aussenseite einen Vordruck, in den die Nummern der innen liegenden Patentschriften eingetragen werden.

Jedes Patent und damit jede Patentschrift kann natürlich nur einer Gruppe zugeteilt werden. Es steht aber jeder Prüfungsstelle frei, deutsche Patentschriften anderer Klassen, deren Inhalt ihr für ihr Arbeitsgebiet beachtlich erscheint, von der Patentschriften-Vertriebsstelle anzufordern, um sie ihrem Vergleichstoff einzuverleiben. Es sind Vorkehrungen getroffen, dass die Prüfungsstellen einander Kenntnis geben, wenn sie glauben, dass eine aus ihrer Prüfungsstelle hervorgehende Patentschrift für eine andere Prüfungsstelle beachtlich erscheint, und die letztgenannte Prüfungsstelle ist dann, wenn sie die Patentschrift in ihren Vergleichstoff aufzunehmen wünscht, in der Lage, diesem Wunsch Ausdruck zu geben, der nach der Drucklegung erfüllt wird.

Das Prüfungsergebnis führt entweder zu einem abweisenden, oder einem die Patenterteilung in Aussicht stellenden Beschluss. Vor der Patenterteilung wird die Anmeldung im Patentblatt bekannt gemacht und zwei Monate lang in der Auslegehalle zur Einsichtnahme für die Interessenten ausgelegt, die die Möglichkeit haben, durch Einspruchserhebung die Neuheitsprüfung der Prüfungsstelle zu ergänzen.

Früher waren die Anmeldeabteilungen, in deren jeder eine Zahl von verwandte Gebiete bearbeitenden Prüfungsstellen zusammen-

gefasst sind, für die Beschlüsse über Bekanntmachung, Zurückweisung, Erteilung und Versagung der Patente zuständig. Im Jahre 1917 wurden diese Befugnisse den einzelnen Prüfern übertragen. Die Behandlung von Einsprüchen ist aber neuerdings wieder den Anmeldeabteilungen vorbehalten, deren Zahl z. Z. 12 beträgt. Bei der Beschlussfassung über Einspruchssachen wirkt der zuständige Prüfer als Berichterstatter mit und wird durch die Sachkunde des Beisitzers unterstützt. Die Prüfer müssen abgeschlossene Hochschulbildung nachweisen und sich mindestens fünf Jahre lang nach der akademischen Abschlussprüfung in der gewerblichen Praxis bewährt haben.

TRANSLATION.

I. ON THE PRINCIPLES OF THE CLASSIFICATION.

For the purposes of the German Patent Office, the entire field of technology is divided into eighty-nine classes. Each class relates to a subject complete in itself, so that the order of succession of the classes in the Classification Key is without significance. When the first classification scheme was being drawn up fifty years ago, the alphabetical order was chosen, so that the scheme begins at A, Aufbereitung von Erzen und Brennstoffe (Dressing Ores and Fuels) for Class 1, and ends at Z, Zucker- und Stärkegewinnung (Sugar and Starch) for Class 89. This arrangement has been justified and, apart from unimportant exceptions, has been retained to this day.

In the course of the wide extension and development of the Patent Office there arose, with the gradual growth of the search material, the necessity for a wider sub-division of the individual classes. Thus some thirty years ago the division of the classes into, roughly, 480 sub-classes was carried out, and these, again, were sub-divided at the beginning of the century into about 8,000 groups.

The division of the classes into these groups was carried out in accordance with the proposals of experts in the separate classes, and was adapted to the special requirements of the search for novelty; it constitutes the result of the long experience of the Examining Officers engaged in the respective subjects. There are no special rules and principles for classifying the patent material. The classification schedule does not form something unchangeable and permanent; it is, on the contrary, enlarged and improved in response to the advances in technology, and is reprinted when necessity arises—as a rule at intervals of from six to eight years—with all the latest developments incorporated.

The last edition of the Classification Scheme appeared in 1926, and this forms at present the basis for the classification of the applications for patents, as well as of the specifications. (A copy of this work is sent herewith.)

The class and group allotment marks are given on the printed copies of the specifications, and in the Inquiry Hall of the Patent Office there is provided for the use of the public a set of all German patent specifications arranged in class order.

II. CONCERNING THE METHOD OF SEARCHING.

The search for novelty takes place in one or other of the 130 Examining Sections after the application has been received and recorded in the "Applications Department." Before reaching the Examiner, the applications pass through the "Allotment Branch," where they are dealt with by some of the senior officials, who have a good general knowledge of the classification, and whose function it is to allot the applications according to classes and subclasses, &c. In some special cases, for instance in the finer subdivisions of chemistry and electricity, the "Allotment Branch" has the assistance of the experts in the subjects. Foreign specifications are dealt with in the same way as the applications, and are then handed over to the appropriate Examining Officers for inclusion in their files.

To the above-mentioned Examining Sections are given, as far as possible, subject divisions complete in themselves in accordance with the classes of the classification. Special importance is attached to the Officers of the Examining Sections remaining as long as possible at their special subjects, for in the expert knowledge which their rich experience gives them is to be found the most valuable aid in the search for novelty. In addition to the patent specifications, text-books, card indexes of technical subjects, collections of photographic reproductions of important articles from periodicals, &c., are at the disposal of the Examiners. The Examiners are also free to build up the classification still further for their private use, if thereby the process of searching is simplified.

The patent specifications which are used by the Examining Sections in their search for novelty are incorporated with the other similar search material in the form in which they are published by the Patent Office. They are collected together in portfolios according to groups, and these are arranged horizontally in compartments of cabinets especially constructed for the purpose, and are covered with a sheet of cardboard, which carries a tab hanging in front of the shelf, which gives the class and group notation, and also the name of the country issuing the specification. Each portfolio has on its outside a register of its contents.

Every patent and, therefore, every specification can naturally be allotted to one group only. But every Examining Section is free to claim from the Sales Branch, copies of German specifications belonging to other classes which are of interest to them, and to incorporate these in its files. Precautions are taken to see that the different Examining Sections keep each other informed of specifications allotted to one section which appear to be of interest to another section. The last-named section is able, if it wants such specifications in its files, to secure copies of them when they are printed.

The results of the search lead either to the application being refused or to its acceptance as the possible subject of a patent grant. Before the patent is granted the application is published in the "Patentblatt," and lies open to public inspection for two months in the Inquiry Hall. Anyone interested has then the oppor-

tunity of lodging an "Opposition" and of supplementing the search of the Examining staff. Formerly the "Application Departments" (each of which comprises a number of Examining Sections dealing with related subjects) were responsible for decisions affecting questions of publication, amendment, grant, and refusal of patents. In 1917, these duties were taken over by the particular Examiners concerned. Opposition cases, however, continue to be dealt with by the "Application Departments," of which there are at the moment twelve. At hearings on opposition cases, the responsible Examiner acts as reporter, with the assistance of his technical colleague.*

Each Examiner must have completed a University or equivalent education and have been engaged for at least five years after his final examination in actual technical practice.

PATENT CLASSIFICATION: STATEMENT RECEIVED FROM THE UNITED STATES PATENT OFFICE.

This Government since its organization has issued approximately a million and two-thirds patents. These are classified in some 298 general classes, which include some 32,118 sub-classes. The general classes are based largely upon art or function, and this is true as to the major groups of sub-classes under the respective general classes and to a less extent as to secondary groups, while the most specific sub-classes are very frequently based upon structure. The classes of machines and the general methods carried out by such machines are usually classified in the one general class, while articles of manufacture and the methods inherent in the production of such articles are classified in another general class. Generally speaking, in this country an article of manufacture is distinguished from a machine in that the former does not possess relatively movable parts and does not transmit or apply power. If it is a part of a machine it is usually a part separately manufactured and sold. Many machines and some apparatus are capable of performing functions or operations common to more than one general class, very frequently common to many sub-classes within one general class. In such instances the patent is classified in the class and sub-class deemed most appropriate and whose class and sub-class titles are broad enough to include all the features of the patent, and copies of it are placed in the various other classes or sub-classes wherever deemed useful, notations being placed on these copies giving information as to where the patent is officially classified.

The whole theme of the classification, although by reason of lack of sufficient employees and the constant growth of the patent arts the theme has not been carried out to perfection, has been to divide up the patents in general classes according to

* The court consists of three members, the Principal of the "Applications Department" and two technical experts, of whom the Examiner who has been in charge of the application is one. A legal expert is called in in cases involving special legal difficulties. A decision is made by the majority, the chairman having a casting vote.

art or function or purpose and divide those of a particular class into major groups or sub-classes according to the more specific art or function or purpose and place under these major groups still more narrow secondary groups which are given to a greater extent names indicating structure or operation or generic names of articles, although sometimes the names indicate art, function, or purpose. Under these secondary groups are sub-classes indicating types of machines or processes, the names common in the arts and understood in the factories as indicating certain definite types are preferred. Still finer division is made in the structural details. Many sub-classes state the material worked upon, but, generally speaking, due to the fact that in the growth of an art substitute materials are almost certain to be used, such titles of sub-classes are not satisfactory. There is a general class of Machine Elements, which has placed in it the patents for such machine elements as, for example, gearing, bearings, belts, cams and eccentrics, racks and pinions, pawls and ratchets, cranks and levers, mechanical movements, &c., as are capable of general use in different types of machines. There are general classes of tools and implements, the patents being grouped according to use. There are many general classes of patents for articles such as apparel, beds, bridges, wooden buildings, fire-arms, ordnance, boats and buoys, stoves and furnaces, &c. The major sub-classes are frequently based on types and the further divisions on structure. Care has always been taken to place within a sub-class only such patents as define structure within the sub-class title or name. The relation of major, secondary, and specific groups always provides a place for a patent which contains matter outside the title or name of a specific sub-class, so that a second copy, or cross-reference, may be placed in the most specific sub-class. To state the rule another way, substantially every ultimate sub-class is subordinate to some group which contains a more generic title and each patent is placed in a sub-class whose title covers or embraces substantially all disclosed in the patent. Features of detail which have been made the subject of subordinate sub-classes under the group receive copies of the patent, which are styled cross-references.

The classes are divided, for examination purposes within the office, among some fifty-five examining divisions, each made up of a chief examiner and a corps of assistant examiners, together with the necessary clerks. It is the practice to assemble in each division those classes that relate in subject matter to each other. Thus each chief examiner becomes a valuable expert and authority upon the arts under his jurisdiction and such other arts as are closely related.

There is published a complete list of all the main classes and the sub-classes, together with an index of both the classes and all the sub-classes, as well as an index of the key word in each sub-class.

A public search room having a duplicate arrangement of copies of patents in classes and sub-classes is preserved for the public with a trained official in charge to aid the members of the public to find the proper classes and sub-classes in which they are interested.

When an application is filed it is sent to the particular division having in charge the art to which the application relates. The chief assigns the application to the assistant who examines applications relating to the specific subject-matter involved in the application. The assistant reviews the application to determine whether it is in proper form and makes a suitable and complete disclosure of the invention and then searches in the necessary sub-classes for the patents which disclose subject-matter most nearly related. The search is continued among foreign patents, which in this office are classified similarly to the United States patents, and also such publications as are suggested by the application to the assistant examiner or to the chief of the division. The result of the search is placed before the chief of the division, who, in conference with the assistant examiner, reviews the entire matter and makes a decision which is communicated to the applicant. Thereafter, the applicant or his counsel may amend, restrict, argue, or otherwise reply to the examiner's letter and the whole matter is then again reviewed. When a final decision is reached which is favourable to the applicant, the patent is directed by the chief of the division to be issued so soon as the applicant, after proper notice to him, has paid the necessary issue fee. If the decision is finally adverse to the applicant he may, on paying a suitable fee, appeal to the Board of Appeals, and if that tribunal refuses a patent, the applicant may appeal to a Court of Appeals located in Washington, which is a general court of appeals for all law and equity cases arising in the district of Columbia.

The discussion was opened by :—Dr. A. P. Thurston, F.R.Ae.S., M.I.A.E., M.I.Ae.E., A.M.I.Mech.E., and Mr. H. Potts, M.Sc.; followed by Mr. H. Rottenburg, M.A., M.I.E.E., and Mr. F. Donker Duyvis.

The following Resolutions were passed :—

Resolved:

1. That it is desirable that a fresh edition of the "Abridgment Class and Index Key" be published incorporating the Examiners' allotment marks and that these allotment marks should be printed on the Patent Specifications.

2. That it is desirable that there should be available for public inspection a set of British Patent Specifications or Abridgments arranged in the order of the examiners' files.

3. That it is desirable that cards which have been removed from the examiners' files, owing to their being older than the legal period of fifty years, should be preserved in classified order and made available to the public.

SECTIONAL MEETING (C).

INFORMATION BUREAUX AND LIAISON WITH NATIONAL AND LOCAL LIBRARIES.

By ARTHUR F. RIDLEY, F.L.A. (Librarian and Assistant Secretary, British Non-Ferrous Metals Research Association).

It will be agreed that effective liaison of Information Bureaux with other sources of informational supply, and in particular with libraries both national and local, cannot but result in their increased efficiency and utility; but so far not much has been said or written on the means by which such contacts are or can be secured or improved.

The ground being in need of further survey, it is suggested that this meeting should form itself into a party of exploration to map some of the routes along which development may possibly be fostered. It is proposed therefore to outline, from the particular angle of the work of an Industrial Research Association, the steps which have been or might be taken towards useful contacts with other libraries. This will be done:—

(1) By describing the work which is being carried out by the Information Bureau of the British Non-Ferrous Metals Research Association.

(2) By indicating particularly the contacts which have been secured with other libraries in its performance.

(3) By suggestions which it is thought might lead to an increase in the value of service rendered by the Research Association and the libraries with which it co-operates.

Whilst the Information Bureau of the B.N.F.M.R.A. works with the support of its own special library, and I am unable to speak with any measure of authority on the methods adopted by a typical Information Bureau which utilizes only outside library resources, there appears to me to be no valid reason why all such agencies, *i.e.* those possessing their own libraries and those utilizing only outside libraries, should not function in an exactly similar way. The existence of a "home" library seems to me to be incidental, and the working of both types of organization to be fundamentally the same.

The work carried on by the Research Association's Information Service, as apart from the ordinary library duties, may be listed briefly under the following sections:—

A. Inquiries.—The Association receives from the official representatives and technical staffs of its 150 member firms and also from its research workers a steady flow of inquiries for information on subjects within its field of interest and activity. This branch of the work is given every possible attention, and the Bureau, in dealing with particular inquiries, utilizes from time to time, as occasion demands, the knowledge and experience of its own staff and of its scientific and technical friends and sup-

porters, as also the resources and special facilities of many libraries and other institutions with which it is in touch, in addition to its own library service, which as far as possible is designed to meet as many of the demands made to the Association as can be reasonably anticipated. Inquiries received cover a very wide range of subjects within or related to the special field covered by the Association's work.

B. Information Circulars.—In this section of the work the Bureau takes the initiative as contrasted with the last section, in which the service is given in response to the specific demands of members. The practice adopted is to send out on a special form information of any technical development or literature which comes to the notice of the Information Bureau and which may be of particular interest or importance to a member or group of members, or to any member of the research staff. Naturally the rapidity of distribution and the freshness of the information supplied in these circulars is of paramount importance, and it has been found that where these conditions are observed a marked interest on the part of recipients is frequently aroused, often leading to increased and regular use of the facilities offered by the Association's information and library services. The two chief features to be observed in the maintenance of this service are:—

(1) Thorough and up-to-date survey of world activities in the Non-Ferrous Metals field.

(2) Careful selection of appropriate recipients for selected information.

C. Technical Literature.—It is one of the functions of the Bureau of Information to draw attention to the existence of any literature touching the Association's interests so that it may be secured when desirable for the Association's special library and/or incorporated in its records. The survey of all technical periodicals which experience has shown may contain matter of value to us is also carried out in the interests of members and researchers and in the compilation of certain sections of the Association's quarterly "Bulletin," in which publication a critically selected "cream" of the world's metallurgical literature is recorded for the information of members.

D. Foreign Visits.—The gathering of information is not confined to the survey of technical literature and similar sources, and during the last three or four years visits have been made by groups of the Association's officers, delegates, members, or research workers to France, Germany, U.S.A., Belgium, and Holland, as well as to numbers of important works in Great Britain. The information secured by these expeditions is usually of a very high order of value in assisting the progress of special sections of research work or in keeping membership groups informed as to progress and development of their industries in foreign countries.

E. Issue of Publications.—The Bureau is charged with the issue of all the Association's publications and with the actual preparation of certain groups of these. That this section of the work is of greater importance and value than in many Bureaux

working in other fields may be gauged from the fact that upwards of 480 printed or other publications have been prepared and issued in the seven years during which the Association has been in existence.

The publications are divided in regard to subject matter as follows :—

Research Reports on the actual investigations carried out by the Association or its collaborators.

Bulletins, issued quarterly, and chiefly of a bibliographical nature, which form a rough guide to the current output of literature on the subjects in which the Association is interested, and record the Association's own publications and the accessions to its library.

Informational Reports on special or occasional topics of interest to members.

Translations of important foreign work prepared either by the Association's staff or by outside translators competent to handle the technicalities involved.

I shall now attempt some description of the links between the work of our own Bureau of Information as outlined above and the outside libraries or other agencies which assist and enable us to do this work with the greatest measure of speed, economy, and efficiency.

Dealing first with the institutions of a national character, these fall naturally from our special view-point into two groups, in the first of which the Patent Office Library and the Science Library, South Kensington, are the most prominent. The magnificent stock of both these libraries is a great asset in work of a technical nature such as that of a Research Association, and frequent use has been made of both by our staff.

The Association's own library regularly receives about 150 periodicals, the most important in its field, but obviously many more require to be surveyed and consulted in our members' interests, and these two libraries provide the necessary facilities. The photostat apparatus at the Patent Office Library and the special loan arrangements for books and periodicals from the Science Library are both utilized in our work.

The second group consists in what may be called the institutional agencies of a national and sometimes international character. For example, in our case the Association is in touch, through representatives, membership, or other contact of its staff, with the excellent library facilities of such bodies as the Department of Scientific and Industrial Research, the Institute of Metals, Institution of Mechanical Engineers, Manchester Literary and Philosophical Society, other Research Associations, and similar bodies. In this group should also be mentioned such organizations at ASLIB and B.E.S.A. and the various important Trade Associations which, although not necessarily in possession of libraries, are in themselves most valuable sources of information touching our interests, and with which, through members of the Research Association staff, we are fortunate to enjoy information exchange facilities of the happiest nature.

This paper makes no attempt to deal with foreign sources of supply of literature and information, but the United States Bureau of Mines, Bureau of Standards, and Department of Commerce should be mentioned as outstanding examples.

Coming now to the question of liaison with local libraries, the Research Association is particularly fortunate in that its Head Office and Information Bureau, situated in the city of Birmingham, is in close proximity to a number of important libraries, comprising:—University Library; Central Public Library, including Public Reference Library, Public Technical Library, Commercial and Patents Library; Municipal Technical School Library; British Cast Iron Research Association Library, and a number of other Scientific and Technical Collections.

It is, of course, well understood that not all these libraries are open to the general public, but with some of those which are not the Association has some official contact, and in other cases also it has been found that officers in charge have been willing to extend every possible facility to assist in meeting a serious inquiry for information of a non-confidential character.

The Bureau of Information is constantly utilizing the resources of the libraries in its immediate area both for the forwarding of its own scientific work and for the satisfaction of the many and varied inquiries which come up for treatment from its members and others.

I have so far said nothing about any service which the Research Association might be able to give in return for the help it obtains from other libraries throughout the country. The nature of the larger and more general libraries on the one hand and of the special field served by the Association's Bureau of Information on the other perhaps determine that we shall, more frequently than they, find ourselves in the rôle of "Seeker" as opposed to that of "Supplier." Occasions do arise, however, when the officers of a general or public library are able to add to the value of their service to the public by referring inquiries to various specialist agencies.

To illustrate the practical workings of such contacts as have been indicated, I can think of nothing more likely to compensate in part for this very brief sketch of the liaison problem than the following examples from my own experience, which occurred on two days of July, 1927. The Association's Bureau of Information received an important request from one of its research workers in Swansea for a copy of a paper from an old German technical periodical, which was nowhere available in Swansea and which was immediately required. The telephone and the courtesy of the librarian served to ensure the delivery of the paper from one large Midland library to the Birmingham Reference Library, where a photostat copy was taken which we were thus able to post within a short time to our investigator.

One of the large libraries concerned in this contact was next faced with an inquiry which was very closely allied to the field of work with which the B.N.F.M. Research Association deals. The inquirer was referred to the Association's Bureau, where, because of our more extensive experience in this special field,

we were able to show him immediately in the printed advertisement pages of a current technical journal the information which he sought. I think it may justly be claimed that the satisfaction of these two requests was accomplished in the shortest possible time following intelligent co-operation between the three libraries concerned.

I believe that none of those who are concerned with the improvement of the service provided by specialist Information Bureaux and general libraries will deny the advantages to be gained by strengthening and multiplying the bonds between them. It is with this aspect of the subject that the concluding portion of this paper will concern itself, in putting forward suggestions calculated to increase the facilities for interchange of service.

The report of the Departmental Committee on Public Libraries, if implemented by Parliament, would lead to great advances in connexion with the fundamental question of book supply to practically the whole nation. Our own problem is more closely concerned with the forging of stronger links between one library or bureau of information and other agencies which are likely to be able to supplement its own particular services from time to time. The suggestions as to the means likely to assist in the desired object are as follows :—

(1) *Through ASLIB.*—Obviously ASLIB, in its capacity as a clearing-house for information, will be able to provide better service in proportion as its membership increases to cover the whole field of specialist interests. The "ASLIB Directory," which it is hoped will shortly be available in every public and other library in the country, will *inter alia* do much to guide general libraries which may desire to supplement their service to the public by reference to sources of specialist information, as well as to assist special libraries and information bureaux in their mutual services for one another. The additional information which progress makes available will be accessible for a certain period in ASLIB records only, until a new edition of the Directory may be issued.

(2) *Through Regional Committees of Liaison Officers.*—What I consider to be the most important proposal, especially with a view to local co-operation between libraries and information bureaux, is the formation of small committees or councils of liaison to cover the needs of convenient regions. This suggestion might not apply to London, which has its own very special problems of co-ordination to face, but in an area such as Birmingham, for example, I conceive that the formation of a small committee representing the various libraries could do much to advance the service gained in its area. I would suggest that each library should be represented by not more than two individuals, of whom one should be an executive officer of the library concerned. This proposal is of course separate from and additional to the suggestions in regard to regional libraries for the public service which are put forward in the report of the Departmental Committee.

As an example of the field of useful work which awaits attention, the following may be instanced :—

"The World List of Scientific Periodicals" has been published for some little time now, and careful study thereof reveals in the libraries of some districts anomalies and gaps which an advisory committee for any given area could do much to rectify. It is recognized that certain institutions must subscribe in their closest interests to certain periodicals; that the proportions of periodicals obtained by purchase or otherwise varies oft-times with the nature of the library. It is none the less obvious that, if six libraries in a comparatively small area are expending between them a certain annual sum on periodicals, careful study of the "World List" coupled with a policy of co-operation between the libraries concerned will enable the sum annually expended to provide a wider measure of common service without interfering with the special needs and interests of the separate libraries. I am aware that in certain cases something of this nature has already been undertaken between individual libraries, but there has been as yet no wholesale consideration of this matter, for which the "World List" provides a splendid opportunity.

Other instances rapidly come to mind of the possibilities of giving better and wider service through administrative contacts such as would be formed by the establishment of Regional Liaison Committees. The meetings of such bodies need not be frequent—perhaps annually—but the work waiting for them in following up the lessons of the "World List" alone is ample.

Summary.

The problem for examination is that of liaison between Bureaux of Information and local and national libraries. Some attempt is made to assist in the discussion of this question by describing briefly the activities of the Information Bureau of an Industrial Research Association, and giving examples of its contacts with libraries and other sources of informational supply.

It is considered that co-operation of this nature is capable of development to the mutual advantage of the libraries and other organizations concerned, and two suggestions are put forward with this object:—

1. The extension of membership of ASLIB to all libraries and other agencies, public or otherwise, which might from time to time require access to information outside their own resources.

2. The formation of *Regional Committees of Liaison Officers* to survey the possibilities for co-operation within definite areas.

The following participated in the discussion on Mr. Ridley's paper:—Mr. B. M. Headicar, F.L.A.; Mr. John McAdam, F.L.A.; Miss M. K. E. Allen, B.Com.Sc.; Mr. R. F. Cholmeley, C.B.E.; Dr. Walter Clark, F.I.C., F.R.P.S.; Mr. L. D. Goldsmith, B.Sc., F.I.C., Mr. P. K. Turner, A.M.I.E.E., M.I.R.E.; and Mr. W. L. Cooper, M.A., F.L.A.

THE SPECIAL LIBRARY FROM THE ADMINISTRATIVE STANDPOINT, WITH SPECIAL REFERENCE TO METHODS OF INDEXING AND FILING.

By P. K. TURNER A.M.I.E.E., M.I.R.E.
(Assistant Chief Engineer, Graham Amplion, Ltd.).

I should like to make it clear that in my opinion the time that we have at our disposal this morning should be occupied by free discussion to the maximum extent; I have therefore cut down my paper to the minimum, and have simply contented myself with a discussion of some methods found useful in my own work.

I am speaking from the point of view of one who is obliged to maintain something in the nature of a special library for the use of his staff and other members of the firm, but to whom the library as such is subordinate to the practical work of the Research Department—in fact, I think that a better title to my own contribution would be " Records of a Research Department."

The first thing which deserves consideration is the nature of the matter to be dealt with. It cannot be too strongly emphasized that in work of the type outlined above the book as such is not exceptionally important. The greater part of the matter consists of reports of the work done in the laboratory, patent specifications, technical correspondence, articles from periodicals, and so forth. By its nature, the book is usually considerably out of date by the time it is published. One does, however, find in every good book some small percentage, varying from half a page to a few chapters, which is really of use; and some note must be made in the records of the particular portions of the book which are useful.

The next point is the classification, and this, I am afraid, is a rather thorny subject. After an experience extending over many years in classifying data of many sorts, I am eventually convinced that the only type of classification which is likely to be satisfactory is a methodical or logical one, as opposed to one based on the alphabet. Until a year ago I had imagined that this was accepted as a commonplace among people concerned with the filing of technical data; but, much to my surprise, at last year's conference I heard statements made that alphabetical classifications could be made quite satisfactory, and I therefore now emphasize my belief in the direct contrary. It would take up too much space to go fully into the matter now, but I am firmly convinced that, even if a satisfactory alphabetical arrangement can be made of references to complete books, it is likely to fail when applied to work of the kind now under discussion, which must, to a large extent, partake of the nature of bibliographical recording, rather than of simple cataloguing.

The main difficulty in connexion with classification is the practical certainty that the librarian will be compelled to make his own classification. In all special technical work one finds that even the most elaborate general library classification does not go

into sufficient detail in the particular subject involved, and it therefore becomes necessary either to start *de novo* with an arbitrary classification, or to make an extension of one of the well known systems. In my opinion, the latter is infinitely preferable, and for myself, I have invariably made an extension either of Dewey or of the I.I.B. classification. There is much scope for argument on the relative merits of Dewey and other systems, but I myself have chosen Dewey on account of its accessibility, and the wide distribution of knowledge of the general classification.

In making an extension to any such classification, there are several traps and pitfalls to be avoided. It must be realized right from the start that the work can only be done by a person who, in addition to a knowledge of classification, has a first-class general knowledge of the subject to be classified, and also a good knowledge of the particular purpose to which the classification is to be put. Even with these qualifications, the task is not an easy one. Take for example such a subject as paint—which I choose because I know little about it. At first sight one is rather prone to make a list of the different materials; first, say, the pigments, and second, the various vehicles that may be used: and having set this down *in extenso* to consider the classification complete. A few months of trial will soon show the complete failure of such a classification. A more helpful method of procedure is to set down at the beginning the various characteristics under which paints might be classified. For example :—

A.—Their colour.

B.—Their type of pigment.

C.—The type of vehicle.

D.—Their properties in use (*e.g.* acid resisting paints, quick drying paints, &c.).

E.—Their purpose; artistic, protective, and so forth.

F.—Their manufacture.

And any other headings that can be thought of.

The classification should be such that any reference whatsoever to paint, stressing any one of the points of view enumerated above, should find its own position in the file: but you may find references which involve simultaneously two of the above criteria of classification, and such must be provided for. To do this work properly, any simple library classification seems to be insufficient, and I therefore in my own work make use of the I.I.B. auxiliary tables, which are of immense assistance.

I may quote as an example an extension recently made by ourselves to deal with the subject of loud-speakers. Here the various criteria of classification are the following. I have put technical terms into ordinary language to make the points more easily understandable.

Properties. Sensitiveness, faithfulness, range as regards very high and very low notes.

Purposes. Speech, music, telegraphy.

Type of Movement. This comprises seven headings, giving different technical details.

Acoustic Type. I.e., horn, cone, and similar types.

In arranging the above it was essential to realize that at any moment we might need to file an article dealing generally with any one of the above headings, or with any single detail, or with any combination of such headings—as, for example, some particular property of a loud-speaker with some particular type of movement. What we eventually arrived at was the following scheme (all loud-speakers fall into our general classification under the number R 376·3, and the figures given in the extension naturally follow after this number).

·1–4 *Loud-speakers for Music.*

·1 *Movements.* This is subdivided from ·12–·17, according to the technical description of various movements: the number ·11 remains vacant for a purpose which will appear presently. It will be seen that this disposes of the third heading enumerated above.

·2 *Horn Type Speakers.*

·21 Horns, &c., as such.
·22–·27 Horn speakers divided according to movements.

It will be seen that the first item of the fourth general heading is thus covered, together with all combinations of this item with anything in the third general heading. The figures ·22–·27 are divided according to the technical nature of the movement exactly as were ·12–·17.

·3 *Loud-speakers without Horns.*

·31 Diaphragms, Cones, Sound-boards, &c.
·32–·37 Speakers without horns divided according to movement.

It will be seen that we have now completed the numbers necessary to subdivide according to either the third or fourth of the above general headings as far as concerns loud-speakers for music, which is, at present, the most important branch of the subject. We now complete our provision for the second general heading by proceeding as follows for loud-speakers not for music.

·5 *Loud-speakers not for Music.*

·51 Movements.
·52 Horn type speakers.
·53 Speakers without horns.

These three, ·51–·53, are subdivided exactly as ·1, ·2, and ·3 respectively, and we have thus completed provision for subdividing according to our main headings except the first. (No. ·4 was kept vacant in case some entirely new type of loud-speaker should appear in the future.) Provision for properties was made by the I.I.B. scheme, by which a number preceded by a single 0 and without brackets allows for dealing with operations or phenomena common to all objects

with which the main classification deals. We therefore had the following subsidiary table :—

·01 Sensitiveness.
·02 Faithfulness.
·03 Range as regards high and low notes.

In this way, if a particular reference deals with the sensitiveness of loud-speakers as a whole, it would be entered as R 376·301, whereas if it deals with the faithfulness of some particular type of movement as applied to a horn type loud-speaker not for music, the reference would be R 376·352·402.

Of course, an elaborate classification such as this may lead to long numbers, but this is inevitable when one needs a really exact specification of highly specialized data.

Considerable use is also made of the I.I.B. subdivisions for point of view, which are, however, too well known for me to go into detail here. The other I.I.B. complementary tables of place, time, form, and language are used to a considerable extent, but, since they are used in their standard form, there is no need for me to give details.

Lastly, as to the particular points of dealing with and arranging various data. The basis of the work is, of course, the vertical filing cabinet, in which, as far as possible, are placed all monographs, that is to say, reports, patent specifications, articles, small books, &c., which deal each with one subject.

There still remains certain matter which cannot be dealt with in this way. There are what we call first-class periodicals, those which are of such uniformly high standard that we consider it necessary to retain them completely ; and also books which are too thick to go into the file conveniently, or which deal with too wide a range of subject to allow of sufficiently accurate filing in any one place. In the case of these items we make a note of anything specially useful for our work and drop into the vertical file a sheet of paper bearing the file number and giving direct reference to the book or periodical in question.

Other periodicals are simply broken up and the useful part of them retained. Naturally one has to take a wide view as to what is useful, retaining not only matters of interest at the moment but any which are sufficiently near the subject to have probable use in the future.

One point is rather important in the actual arrangement of the guides in the cabinet. I find in practice that great inconvenience is likely to develop if one adopts the rather common habit of using, for the guide-cards carrying consecutive main headings, tabs in different positions. For example, it is common practice for numbered cards to be arranged with No. 1 on the extreme left, No. 2 in the second position, No. 3 in the third position, &c., across to the right. This invariably leads to great trouble when intervening guides are required, as is sure to be the case sooner or later.

The alternative is to place all the main headings in the first position, the first class of subsidiary headings in the second, and so on. Thus, in the Dewey system, guides numbered 100, 200, 300, &c., have their tabs in the first position, on the extreme left; tabs

numbered 110, 120, &c., 210, 220, &c., and so forth, are all in the second position; tabs numbered 111 112, and so on, involving figures in the units place, are in the third position; and so on indefinitely. In this way there is never any trouble in inserting further guides as it becomes necessary. If, as may occasionally be the case, the numbers in use go into even greater detail than is permitted, by having a five-figure number on the right-hand side (which is what one gets with the usual five-position card), one can go back to the left, changing the colour of the tab.

In conclusion let me again stress the fact that my main object in bringing forward these unsystematic notes on my own work is simply to stimulate discussion on the subject.

In introducing the above paper, Mr. P. K. TURNER made one correction, or rather amplification; he had spoken, at the top of page 147, of "Dewey or the I.I.B. classification," as if it were only the question of one of these against any others, the two being equivalent. That, he submitted, had been the case for some years, because the I.I.B. Manual was out of print. One had in practice to use Dewey with or without some I.I.B. elaborations.

A new edition of the Brussels Manual was, however, now in the press, and he had heard it had not been found possible to reconcile it with Dewey at all points. One had therefore not only to choose decimal against other classifications, but must also come to a definite choice between these two. His own advice was: Dewey for wide and simple classification of books, as in general libraries; I.I.B. where close classification and bibliographic work formed any large part of the programme.

He had had some experience in the matter of "writing down" technical matters to make them comprehensible to the general public. In his case the difficulty went deeper than the matter of technical terms; in fact, in his department (wireless), the technical terms were constantly on the lips of schoolboys and others with little or no idea of their real meaning. The real trouble was that the general public has no mental training of the kind necessary to appreciate a closely reasoned argument, even if neatly and concisely put without technical terms.

His advice to those faced with the necessity of appealing to such minds was to avoid close reasoning and conciseness; to be diffuse; to repeat important statements several times in different words; and to make large use of homely analogies, even if their applicability was really doubtful.

In the unavoidable absence of Mr. FOSTER SPROXTON (British Xylonite Co., Ltd., Manningtree), the following communication was presented on his behalf by Mr. L. D. Goldsmith:—

The Council of ASLIB is to be congratulated on arranging this discussion, because there is no doubt that the formation of this Association was chiefly due to the endeavours of certain people interested in the small Special Library, *i.e.*, not a library containing hundreds of thousands of books in charge of a first-class brain, but a library of a few score books, together with current literature, in the care of a first-class character.

These Conferences have made several attempts to define a Special Library, with more or less success, but one attribute of the Special Library which has been perhaps overlooked is that it is usually a subsidiary branch of a larger organization. This is true of all the technical libraries scattered throughout the country attached to the factories and offices of manufacturing companies, and it is also true of the libraries attached to our research organization. The efficiency of the Special Library is measured by the extent to which it assists and simplifies the work of the larger organization to which it is attached.

Hitherto the majority of papers read before these Conferences have been by the librarians themselves, *i.e.* the people who sell the wares, and very interesting these papers have been, but we must not overlook the opinions of the consumers, *i.e.* those who make use of the facilities provided by the librarians of special libraries.

What are, in the opinion of a library user, the characteristics of an ideal Special Librarian, and is there an ideal method of indexing information? It would be dangerous to say, at a Conference such as this, that the ideal librarian does not exist. It would, however, be safe to say that a librarian with the following qualifications would be worth a considerably larger salary than any board of directors would be willing to pay him :—

1. Intimate knowledge of the subjects covered by the library.
2. Translating and abstracting ability.
3. Accuracy.
4. Imagination. I include this because I think it requires more than the average power of imagination to put oneself in the place of a research worker consulting a library in, say, five years' time, and to choose indexing terms which will lead him most quickly to the required information.
5. Discipline.

And now what does a research worker expect from his Special Library and its card index? His object is to acquire information in the quickest way, with the least waste of time, on matters of secondary importance and, above all, on sources of doubtful accuracy. In the library with which I am acquainted we use the Kaiser system, to which we were introduced by the kindness of Mr. Barbour. In order to study the research worker's interests as much as possible, a preliminary list of references is made out each week and classified according to the subjects it deals with, and the cards are not finally added to the index until the librarian and the research worker on the particular subject have agreed on the indexing terms and the form of wording to be used. As far as possible salient points of a document are mentioned on the cards, and abbreviated words and sentences are both sanctioned. Factory terms established by long usage are allowed as indexing terms, although sometimes a duplicate may have to be carded under a more scientific term.

Probably the great bugbear of all librarians and users of a Special Library is the uncertified paragraph of the technical press. I believe a discussion on this subject was held at one of our early Conferences, when representatives of the technical press defended the practice of printing items of technical and scientific news without giving references. Nevertheless, to the special librarian and the research worker they are a nuisance. They multiply the number of cards in a card index without giving any additional information or providing any additional accuracy—in fact they may introduce inaccuracy. May I give a personal experience? About five years ago I committed a short review for an industrial journal, and I am still receiving from a press cutting agency, up to within the last few months, extracts from this review culled from the provincial press. I am bound to admit that the extracts are quite correct so far as they go, except that I have been granted a doctorate, no doubt deserved but entirely unauthorized. It would be interesting to hear from special librarians what steps they take to refer back such paragraphs to original sources of information. I confess that we have not done this in the library I am connected with, but I think it is a task that ought to be undertaken in the interests of economy of space and accuracy.

There is probably no better test of the efficiency of a system of indexing other than using a library to draw up a digest of the information on a specific subject. I do not think the Association could confer a greater boon on the users of Special Libraries scattered throughout the country, in whose interests the Association was originally formed, than to give them some guidance in this matter of indexing information. We do not want an inquiry into every possible system of indexing. That would be a task far beyond the resources of this Association. I think, however, it might be possible in the next few years for a small representative committee to visit different Special Libraries in this country and draw up a report for circulation stating what were in their opinion the advantages and disadvantages of the systems they saw at work, and, if the meeting is in agreement, perhaps a resolution might be moved.

The following also participated in the discussion :—Miss Savill; Mr. L. D. Goldsmith, B.Sc., F.I.C.; Dr. Walter Clark, F.I.C., F.R.P.S.; Mr. B. M. Headicar, F.L.A.; Dr. E. E. Lowe, B.Sc., F.L.A.; Mr. T. Wadsworth, M.Sc.; Mrs. Charles McCarthy; Miss P. Strachey; and Mr. E. I. Robson, M.A.

Mr. P. K. TURNER, in reply, dealt first with a question raised by Mr. Sproxton through Mr. Goldsmith—that of odd notes of doubtful authority. He explained how one large part of these was eliminated instantly, because it attributed important discoveries to "the well known expert, Mr. ——" (*vide* Press), while the real qualifications of most of these popular professors and experts are only too well known to any real technical man. Another large part described inventions obviously impossible in the present stage of knowledge, and could also be wiped out. There remained a few, chiefly dealing with alleged foreign events, and these his firm forwarded to their sub-companies and agents abroad for inquiry.

In reply to Miss Savill's statement that in her case a logical classification was not used because hers was a small department with a small staff, he pointed out that these were precisely the conditions under which it was especially useful to employ a method of classification developed by those with greater facilities.

Mr. Goldsmith had raised the old controversy of librarian versus technical expert, and Mr. Headicar had put forward in trenchant terms his views on the matter. Mrs. McCarthy also had advised the employment of trained librarians, even if the cost were greater. Mr. Turner explained that in his case trained librarians were cheaper than experts in the subject at issue; and even so he preferred the latter if a choice had to be made. He believed firmly that *both* library and technical qualifications were essential; but he also believed that one could more quickly teach librarianship to a physicist (of suitable mentality) than *vice versa*.

In connexion with Dr. Clark's very valuable remarks on work at the Science Library, in which he touched on methods for keeping track of periodicals where many were being obtained, he had found that some of the commercial "office system" firms had admirable cards and forms especially adapted to this purpose; and that it saved time and trouble to go to them in this matter.

THE INFORMATION BUREAU IN RELATION TO THE CONSULTANT.

NOTE BY J. C. WITHERS, Ph.D.
(Head of Information Bureau, British Cotton Industry Research Association).

In the course of his duties the director of an information bureau accumulates much information which is not recorded in open publications and may be even confidential. When preparing an answer to a specific query, he will give his own people the whole of his knowledge, but if the request for information comes from an outside source he will at once be faced with a serious problem. Having pride in his work, he will naturally want to demonstrate the efficiency of his Bureau, but, on the other hand, he may have to be careful not to divulge too much. He will need very often to draw the line between imparting facts and giving advice, that is, he will have to remember the interests of professional consultants, to whom he may be bound by the rules of conduct laid down by a Chartered Institute. It is highly probable that, as intercourse between workers in Information Bureaux grows through the development of ASLIB, such problems will become more frequent, and this note is written by one who has already faced the difficulty in the hope that a useful exchange of opinions may follow.

The following took part in the discussion on Dr. Withers's paper:—Dr. W. Clark, F.I.C., F.R.P.S.; and Mr. T. Wadsworth, M.Sc.

THE ARRANGEMENT OF BOOKS IN A COMPREHENSIVE TEXTILE LIBRARY.

By HUGH L. ROBINSON

(Editor, "Journal of the Textile Institute").

I shall feel myself on firmer ground if I preface what I wish to say by the confession that I know practically nothing of the technicalities of library arrangement and cataloguing. I am, however, brought into daily contact with textile literature, and have now, at any rate in the initial stages, to deal with the building up of a comprehensive textile library, since that is a definite project of the Council of the Textile Institute. I should also say that I have used a free interpretation of the title of this paper, and have taken "books" to mean pamphlets, reports, maps, &c. It is possible that our library will contain also raw materials, yarns, and fabrics, but this being *sub judice* need not concern us. The problems confronting the Committee of our Institute charged with library affairs of course include problems of finance and its corollary accommodation, but these are domestic matters and I need not refer to them here.

The biggest problem immediately in hand, biggest that is from the point of bulk of material, is that of storing and recording the periodicals received either upon an exchange or purchase basis at the Institute and from which abstracts are made for publication in our Journal. To classify and record their contents would be a colossal task and one by no means within our powers. Fortunately no such Herculean labour is required, since the abstracting of these Journals and the handling of the abstracts themselves supply the solution to the major part of the problem, *i.e.* the classification and recording of their more important contents. The scheme of abstracting, recording, indexing, &c., employed is briefly as follows: Textile and other journals dealing with allied subjects or applied sciences are searched and abstracted mainly by the Textile Research Associations, for which the Institute's Journal is the official publishing medium. This abstracting is supplemented by the work of individual abstractors as far as financial resources permit. The abstracts all come to the Institute, where they are compared with a card index so as to avoid repetition and overlapping. Each guide card in the card index bears the title of a Journal and its number (if it has one) as given in the "World List of Scientific Periodicals." Behind the guide card is a second card, which supplies information as to the publishers of the Journal, the terms on which it is obtained, *e.g.* exchange, purchase, &c., and also particulars of the file copies of the Journal we possess and where they are stored, *i.e.* shelf number, &c. Behind this second card are the "annual cards." These cards are all the same colour for any one year, but the colour is changed each year; *e.g.* for 1926 we used salmon, for 1927 yellow, and so on. Upon these cards are recorded the

year, volume, issue, and page numbers of any article abstracted, and of course the page number in our own Journal upon which the abstract appears. Those abstracts are indexed annually, and thus is provided a fairly adequate means of dealing with periodicals. But, of course, other points arise: can we go on piling up on our shelves volume after volume of unbound periodicals? If not, how can we secure the preservation of these, undoubtedly valuable, documents? Here, of course, "finance" and "accommodation" step in, and a compromise according to their importance and local circumstances will have to be found. The Journal's guide cards are numbered upon the "World List" basis and kept in numerical order. Journals not in the "World List" (about 25 per cent. of the whole) are arranged alphabetically and kept in a separate drawer. Volume 1 of the "List" has proved invaluable, and I hope that a revised and up-to-date edition will soon prove possible. A great boon, too, would be an index for Volume 1 under subjects and geographically.

Of books, pamphlets, press cuttings, &c., we do not, as yet, possess many, but as it is now the declared policy of our Council to build up as comprehensive a textile library as possible it will be well to point out that such a library would cover the production, marketing, and use of all fibres, as well as the whole range of processes peculiar to the several branches of the textile industry; buildings, power, and the economics of textiles have all to be included, and provision has also to be made for covering to some extent the sciences whose aid is increasingly being sought, *e.g.* chemistry, physics, &c. In a word, our library, as our Journal, will be planned to provide students with every possible publication upon general textile technology, knowledge of which is the basis of the Associateship qualification of the Institute. To provide a scheme for classifying and indexing the present library, a scheme capable of indefinite extension, is the present task, and it is made easier, of course, by the fact that the ground is not hampered by a very large collection of books, &c., awaiting handling. I think an Author index will be essential (and indeed is already in course of preparation), but the Subject index and the classification basis is the main problem. With such a proposition in mind, one naturally turns to Dewey's "Decimal Classification"; though exact adoption of this scheme seems to me impracticable, yet upon his main idea a scheme suitable for a textile library can be built. He makes it clear that any scheme adopted should be one that will grow as the library to which it is applied grows; that a scheme should be planned to cover the classification and indexing of books, pamphlets, journals, and any matter that may reasonably be included in a library, and that any scheme adopted should avoid too great complexity. He clearly states that his is not the only decimal scheme of classification possible, and was no doubt well aware that specialist libraries would have to vary his scheme. From Dewey I have gone to the classification adopted in the Science Library, South Kensington; though somewhat more comprehensive than Dewey's classification it also fails to provide what is required. The index to the Science Library scheme guides us to certain textile subjects. I

have set out below the more important of these, and in order that comparison and criticism may be more easy I have rearranged them as nearly as possible on the plan of classification used for the Abstracts section of our Journal; to this plan, of which you each have a copy, I shall refer later.

Textile Institute Abstracts Classification.	Subject Entries from Science Library Index.	Science Library Numbers.
I. FIBRES AND THEIR PRODUCTION.	(*a*) Mineral Fibres.	642.29.
	Asbestos. Economic geology.	549.76.
	Mineralogy.	652.15.
	(*b*) Animal Fibres.	
	Chemistry of — —.	647.83.
	Sheep: Breeding.	675.52.
	Sheep: Zoology.	599.62.
	Wool Production.	675.522.
	Silk Worms and Silk Culture.	675.7.
	,, ,, : Zoology.	594.86.
	(*c*) Vegetable Fibres.	
	Chemistry of — —.	647.81.
	Plant Breeding.	673.03.
	Fibre Plants.	673.8.
	Cotton: Agriculture of —.	673.81.
	,, : Botany of —.	583.17.
	,, : Diseases of —.	674.981.
	Flax: Agriculture of —.	673.811.
	,, : Botany of —.	583.21.
	,, : Diseases of —.	674.9811.
	Hemp: Agriculture of —.	673.813.
	Jute: ,, ,,	673.815.
	Sisal: ,, ,,	673.817.
	Other Fibres (*e.g.* Ramie).	673.819.
	(*d*) Artificial Fibres.	
	Cellulose: Chemistry of —.	545.41.
	,, : Chem. Tech. of —.	647.77.
	Cellulose Esters.	647.77.
	,, Nitrates.	645.63.
	Artificial Silk.	647.85.
	Viscose.	647.77.
II. CONVERSION OF FIBRES INTO YARNS.	Carding.	687.25.
	Combing.	687.25.
	Spinning: Cotton.	687.4.
	Flax.	687.71.
	Silk.	687.6.
	Wool.	687.5.
	Other Fibres.	687.23.
	Yarn: Cotton.	687.4.
	Woollen.	687.5.
	Cordage: Rope, Twine.	687.84.

Textile Institute Abstracts Classification.	Subject Entries from Science Library Index.	Science Library Numbers.
III. CONVERSION OF YARNS INTO FABRICS.	Size. (Sizing.)	647.93.
	Weaving.	687.3.
	Looms, Hand.	687.31.
	,, , Power.	687.33.
	Knitting Machines, &c.	687.5.
	Textile Manufactures.	687.2; .4; .5; &c.
	Fabrics. Aeroplane.	629.61.
	Calico.	687.4.
	Felt.	687.8.
IV. CHEMICAL AND OTHER PROCESSES.	Bleaching.	646.47.
	Calico Printing.	646.47.
	Drying.	641.85.
	Dyeing.	646.47.
	Finishing.	687.3.
	Fireproofing.	087.39.
	Mercerising.	687.35.
V. LAUNDERING AND DRY-CLEANING.	Laundries.	623.99.
VI. ANALYSIS, TESTING, GRADING, AND DEFECTS.	Fibre Analysis.	647.89.
	Apparatus for Testing.	621.33.
	Colloid Chemistry.	542.7.
	,, Industries.	647.6.
	Elasticity Measurement.	531.75.
	Elastic Properties of Colloids.	524.75.
VII. BUILDING AND POWER.	Atmospheric Humidity.	555.1.
	Buildings: Fire Prevention.	614.74.
	Factory Ventilation.	622.8.
	Mill Buildings.	622.44.
VIII. DESIGN.	Textile Design.	687.1.
IX. COMMERCE, ECONOMICS, LABOUR, &c.	Textile Industries.	687.

I think criticism of the above table is to a large extent obvious, but the major points may be recorded :—

(*a*) No single section is complete; the missing headings may be included in those given, but that alone constitutes a defect.

(*b*) The grouping of certain subjects under the same numbers, *e.g.* Bleaching, Calico Printing, and Dyeing (646.47); or Carding and Combing (687.25), is perhaps per-

missible in a general library, it does not provide enough differentiation in a special library.

(*c*) The numbers allotted are obviously part of a more comprehensive scheme: the scheme for a special library should be a "whole" not a "part," and the numbering should be simpler.

(*d*) Textile books are often comprehensive in character, *e.g.* Matthew's "Textile Fibres," and so a "general" section would be needed in each class. Dewey, of course, provides for this.

(*e*) Provision would also have to be made for "ancient" books in each division. A large percentage of textile books would come under this head.

(*f*) The classification adopted should be based upon the practice of the industry and the numbering should be in sequence. The scheme above is entirely out of accord with this. For example, Weaving and Finishing are put under 687.3, but Finishing is usually a final process, which may be preceded by Bleaching, Dyeing, Printing, Mercerizing, and so forth.

Despite Dewey's statement that "to make out a new set of heads would involve labour and cost vastly beyond the dreams of any person who has not tried exactly this work," it has been attempted below upon the basis of the Abstracts classification already referred to. The preparation of this classification has certainly involved much labour on the part of the members of the Institute's Publications Committee, who are, as were the helpers secured by Dewey, experts in their own subjects. The spade work has therefore been done, and I have had little more to consider than "the practical requirements," leaving "theoretical harmony" to take care of itself. The scheme I suggest for use is as follows :—

SCHEME FOR CLASSIFICATION OF TEXTILE INSTITUTE LIBRARY.

First Summary : Classes.

0 General.
1 Fibres and Their Production.
2 Conversion of Fibres into Yarns.
3 Conversion of Yarns into Fabrics.
4 Chemical and Other Processes.
5 Laundering and Dry Cleaning.
6 Discriminative Technology.
7 Building and Power.
8 Design.
9 Textile Sociology.

Second Summary : Divisions.

0. General.

000 Ceneral.
010 Bibliographies, Dictionaries, Glossaries, Cyclopædias.
020 General Text-books.

SCHEME FOR CLASSIFICATION, &c. (*continued*).

030 Technical and other journals not in 040.
040 Societies: their Publications.
050 Essays, Lectures, Reports.
060 Education and educational publications.
070 Research.
080 History and Biography.
090 ——.

I. FIBRES AND THEIR PRODUCTION.

100 Fibres in General.
110 Mineral Fibres.
120 Animal Fibres: Wool.
130 ,, ,, : Silk.
140 ,, ,, : Others.
150 Vegetable Fibres: Cotton.
160 ,, ,, : Flax.
170 ,, ,, : Others.
180 Artificial Fibres.
190 ——.

II. CONVERSION OF FIBRES INTO FINISHED YARNS.

200 General.
210 Mineral. (Prepn. Spinning and Doubling.)
220 Animal: Wool ,, ,,
230 ,, : Silk ,, ,,
240 ,, : Other ,, ,,
250 Vegetable: Cotton ,, ,,
260 ,, : Flax ,, ,,
270 ,, : Other ,, ,,
280 Artificial.
290 ——.

III. CONVERSION OF YARNS INTO FABRICS.

300 to 390 (Similar to II above.)

IV. CHEMICAL AND OTHER PROCESSES.

400 to 490 (Subject to expert Sub-Division.)

V. LAUNDERING AND DRY-CLEANING.

500 to 590 (See IV.)

VI. DISCRIMINATIVE TECHNOLOGY.

600 to 690 (See IV.)

VII. BUILDING AND POWER.

700 to 790 (See IV.)

VIII. DESIGN.

800 to 890 (See IV.)

IX. TEXTILE SOCIOLOGY.

900 to 990 (See IV.)

In this scheme the following points may be noted :—

(*a*) It follows closely the Abstracts classification so far as classes are concerned.

(*b*) The divisions vary where division according to fibres seems to be preferable. Experts writing on textiles usually deal with one fibre and one process, *e.g.* Cotton Spinning, Woollen Weaving, &c., whereas certain chemical processes, *e.g.* Dyeing, are usually written upon as applied to *all* fibres.

(*c*) Experts will be asked to carry out the sub-divisions, and so the scheme is here given in outline only.

(*d*) It allows of indefinite expansion, but at first simple numerals will suffice, and no resort to decimal numerals will be needed for some time. These can be applied in any division or sub-division with very little trouble.

In conclusion, I should like to say that I much appreciate the invitation to read this paper, and have to acknowledge the kind help, freely given, of my Chairman, Dr. J. C. Withers, of the Shirley Institute, and of the Institute's Honorary Librarian, Mr. John Read, of Salford Technical School.

The following spoke in the discussion on Mr Robinson's paper :—Mr. G. B. Willey, A.R.S.M., F.I.C.; Mr. B. M. Headicar, F.L.A.; Dr. W. Clark, F.I.C., F.R.P.S.; and Mr. P. K. Turner, A.M.I.E.E., M.I.R.E.

INFORMAL DISCUSSIONS.

Sunday Evening, September 25th, 1927.

NEW METHODS OF PHOTOGRAPHIC REPRODUCTION AS APPLIED TO PRINTED AND MS. MATERIAL formed the subject of an informal discussion. This was introduced by Mr. N. Parley (Percy Lund, Humphries & Co., Ltd.).

Mr. R. H. New opened the discussion and was followed by Mr. J. Wendell and Prof. G. Kögel, who had come over especially from Germany for the Conference and who described a recent process of contact printing which he had invented.

A PANEL OF EXPERT TRANSLATORS was the next subject to be discussed. Dr. R. S. Hutton (British Non-Ferrous Metals Research Association) opened.

The following took part :—Mr. Ernest I. Robson, M.A.; Mr. H. Potts, M.Sc.; Dr. J. C. Withers; Mr. H. H. Johnson, A.M.I.Mech.E., A.M.I.E.E., Wh.Ex.; Mr. J. G. Pearce, B.Sc., M.I.E.E.; Dr. E. H. Tripp; Mr. S. J. Nightingale; and Mr. G. Shaw Scott, M.Sc

GENERAL SESSION (Part I).

Sunday Evening, September 25th, 1927.

Chairman:

BRIG.-GENERAL MAGNUS MOWAT, C.B.E., M.Inst.C.E., M.I.Mech.E.

STANDARDS OF BOOK SELECTION IN SCIENCE AND TECHNOLOGY.

BY SIR RICHARD GREGORY, D.Sc., F.R.A.S.
(Editor of "Nature").

In these days of minute specialization in science and technology, and of a multitude of books, both general and specific, the problem of selecting the most worthy and suitable works for a library is so difficult that some librarians give it up in despair, while others are content with a solution of it which satisfies their needs and yet does not conform to any particular postulates or propositions bearing upon the principles of selection. As a matter of fact, there are no defin te or accepted standards by which the worth of such books can be accurately measured; but the same comment might reasonably be made of works in any other branch of literature—fiction, art, history—with which libraries are concerned. Of the thousands of works of fiction published, what determines their admission to or exclusion from the shelves of public or other libraries? Chiefly the reputation or authority of the authors. So it must be with books on science and technology. When an author is known to have devoted particular attention to the subject of his book, then the work is obviously one to be given serious consideration. A careful compilation may be just as useful an addition to a library, but it cannot have the same authority and therefore belongs to a different category.

There still remains, however, the practical problem of deciding what books are by original authorities and what by writers without the particular knowledge which gives distinction to a scientific or technical book. What librarians would probably like is a monthly list in which such books were grouped in classes of say A, B, and C, according to their importance, but the difficulties in producing such a list are almost insuperable. Failing this, such a list as the "Technical Book Index," issued quarterly by the Technology Department of the Carnegie Library of Pittsburgh, provides a most helpful guide to the selection of books on pure and applied science. The "Index" is arranged in alphabetical order according to authors' names; and it gives extracts from reviews in scientific, technical, and trade journals expressing the scope and value of the works mentioned. It is not supposed that reviews furnish an infallible index to works of outstanding importance, but they do provide a practicable source of information, and a useful purpose is served by bringing them together as is done in the "Index" of the Carnegie Library. The recent "Report on Public Libraries in England and Wales" recognizes

that good and necessary books declare themselves slowly, and that there is an insufficiency of competent critics to help the librarian in his task. The Public Libraries Committee says in this Report:—

"Attempts to provide a guide for book selection for librarians, some fairly good, have from time to time been made, but for various reasons have failed. Possibly the task is too difficult, and consequently the present method of book selection in most libraries is and can be little better than the primitive method of trial. It cannot be expected that librarians or book selection committees, however competent as literary critics, should be qualified judges of all scientific and technical publications, and reliable reviews of these are usually the most difficult to find and the most belated in appearance. Librarians would, we believe, welcome assistance in the choice of books by the issue of authoritative surveys of new publications by a panel of competent judges. It is, however, essential that such surveys should not be too long delayed, and it is not easy to find qualified critics who are able and willing to devote themselves to the prompt evaluation of new books. Such surveys are, however, issued by the American Library Association, and are found helpful by librarians in America."

A System of Selection.

So far as I know, there is no central organization in this country which affords the same kind of competent guidance in the selection of books as that given by the American Library Association, Chicago. Each month a tentative list of all books received during the previous month is sent to representative librarians, who vote on books they have personally examined; and these votes, together with references to notices of the books in leading journals and opinions from a panel of voluntary workers, are considered by a staff which reads the selected books and prepares notes upon them for subscribers to the list. In the case of new editions (especially of scientific and technical books) libraries are advised whether the alterations are sufficient to make it desirable that the older editions should be replaced by the new.

Here then is a system which at any rate provides a sieve by which the more substantial works are separated from those which pass through the mesh. The Public Libraries Committee suggests that the Carnegie United Kingdom Trust, which has done so much for library work and organization, might very appropriately promote the establishment of a similar scheme in this country; and we are sure that librarians would welcome such an experiment. Another plan would be to make the Science Library at South Kensington responsible for the selection of scientific and technical books of outstanding importance. The Public Libraries Committee contemplates that this library will be the principal source on which the Central Library will depend for the supply of books needed by research students in science, and the facilities it possesses or could acquire for selecting the best works on science and technology might readily be made available to libraries generally.

The task of deciding what are the best books in any subject is, however, one which no individual or institution can lightly undertake. Lists alone are not sufficient, and if they are annotated then great responsibility is placed upon the judges unless the comments are purely explanatory. There must be different standards for different types of book, and no single touchstone will be sufficient to separate the gold from the baser metal in all the classes. For our present purpose we may distinguish three groups, namely (1) popular works, (2) text-books, (3) works of reference, to each of which a different standard of selection must be applied.

(1) *Popular Science.*—Popular books on scientific and technological subjects vary from childishly simple essays to closely reasoned accounts of the most recent additions to knowledge. They may, however, be divided into two main classes distinguished both by authorship and style. One class consists of books by writers who have the literary art of attractive presentation of scientific fact or conception. They are able to state the case for atoms and electrons just as clearly as for cells and chromosomes. They are not expert witnesses but counsel having the faculty of seeing essential points and expounding them to the court. Every librarian knows the names of some authors of this type who are popular with their readers. The works are often superficial, and scientific critics may regard the treatment as unsatisfactory, yet they serve a purpose in leading readers into realms of knowledge previously unknown to them.

Between this type of popular book with its everyday vocabulary and sentimental appeal and the book by an exponent who knows his subject by first-hand experience there is usually a great gap. Few original investigators in scientific fields are capable also of presenting them in attractive and intelligible language. They use technical words and terms which convey no real meaning to general readers, and their books are for study rather than for reading as recreation. It is impossible to set a definite standard of suitability for books of this kind or for those of the more elementary type. All that can be done is to be guided by experience as to authors whose works are most popular with particular groups of readers.

A list of one hundred "Popular Books in Science" is issued by the American Library Association. This list was prepared by a special committee of the Washington Academy of Sciences; and it gives, in addition to full bibliographic particulars, a descriptive paragraph about each book and notes upon the various groups of scientific subjects under which the books are classified. The list, though a very useful guide to sound popular works in science, is not altogether satisfactory from our point of view. It certainly includes about forty English books which are available from publishers in the United States; but there are, of course, many popular scientific books which have never been taken over in this way, and these seem to have been left out of consideration.

The principles followed by the Committee in compiling the list are, however, of general application, and are stated as follows:—

"Would the average reader who uses a public library, after reading the book in question, read it through to the end and

come back to the librarian for another on the same subject? Such a book should be included. Or would he lay it down after a little while and turn to some other kind of book as being more interesting and not return to the subject again? Such a book should not be included, however accurate, thorough, and complete it might be from the standpoint of a specialist.

"It is also desirable that the book should not be professedly a text-book, nor should it be written in text-book style; that is, it must not be a book intended primarily for the seeker after information regardless of whether the information be interesting reading or not. It is perhaps needless to add that it should have been written by an author who knows his subject thoroughly and should not be so old as to be obsolete in its facts and speculations."

(2) *Books for Students.*—Text-books for use in school or college belong to a different category from that of popular works for general readers. Their function is not so much to inspire as to instruct, and they sacrifice the flow of language to concise and precise statements of ascertained fact and established principle. The usual standard by which a text-book is measured is that of a proximate or ultimate examination. In this country a text-book which has no relation to examination requirements has little chance of success however original it may be; indeed, it may suffer by the very originality of its qualities. A list of the best text-books in any subject, therefore, would differ according to the point of view adopted—whether that of original and stimulating treatment or that of preparation for particular examinations. There are few books of the former type and many of the latter. In the text-book field the name of an author does not carry so much weight as it does in more popular literature, and new authors are continually competing with old for first place. Each teacher or professor has his own idea as to what are the best books for his students, so that any list of text-books published by a body representing the teaching profession tends to become a list of nearly all books available, with no comments on their value.

Two such lists are published by the Science Masters' Association and the Association of Women Science Teachers respectively. The lists are useful catalogues of titles of class-books and works of reference upon various branches of science, but what a librarian or student wishes to know is what are the best two or three books in each of the groups, and neither list affords that kind of guidance. The fact is that in almost any usual school subject of scientific study there are twenty or more "best" books, and only individual preference selects one rather than another. It may be doubted whether librarians should include such books on their shelves, or limit themselves to text-books of an advanced type which students may not be able to afford to purchase or which may be of service for reference.

The only sound standard of school book selection is that of successful experience, so that if such books are included in a public library probably the best plan is to communicate with teachers of science and technology in the secondary and tech-

nical schools of the district as to the books in actual use. This may be an unsatisfactory course to follow, but it is preferable to placing upon a librarian the responsibility of selecting the best text-books from scores which are equally serviceable. The tendency in school text-books is towards consideration of everyday things and away from the purely academic attitude, so that some books of this class are as acceptable to many readers as are books written in what is conceived to be a popular style. The classified and annotated catalogue of "Some Modern Books for the Teacher and Parent," prepared by Mr. C. Nowell for the Coventry Public Libraries, thus includes the titles of a number of books used in schools and colleges as well as those intended for general reading. While useful as a catalogue, it represents only an individual selection without any obvious standard of preference, so that some books are included which might have been omitted and others are omitted which should have been included.

(3) *Standard Works.*—An attempt is made to provide a guide to what books are of value to students of science and technology in Sonnenschein's monumental work "The Best Books," the third edition of which appeared a few months ago. Three-quarters of the volume comes under the head of science understood in a broad sense, and there are signs by which works of outstanding importance may be distinguished from others. Such a work, however, soon gets out of date, and what librarians want is a periodical list in which scientific works are evaluated on a standard plan. Almost every week sees the publication of a number of books on various topics of science and technology, and to decide which are of permanent value and which negligible puts too great a strain upon the capacity of a librarian or a library committee. What, for example, determines the works of reference which ought to be in a library and those which may be omitted? Every department of science and technology is now minutely specialized and for most of the many aspects of them there are special books. Probably the chief means by which the worth of these is measured are reviews in leading journals devoted to science and technology, but such notices are often long delayed; and even the best reviewers have different standards of value. When, however, a work is actually purchased for the library of a leading scientific or technical society, or accepted from one of its members, this fact provides positive evidence of its substantial quality. If, therefore, arrangements could be made to compile a monthly list of such purchases, librarians would be provided with titles of works of outstanding importance from which to select what would be most suitable for their reference shelves.

Summary.

Books on science and technology may be divided into three classes:—(1) popular works for general readers, (2) text-books for students, (3) works of reference. Though in each class the style or authority of the author is an important factor in selecting the best books, assistance would be given to librarians by the publication of a monthly list of new books with brief explanatory

notes on their contents. It would no doubt be invidious as well as difficult to divide the books in each class into two or three grades according to suitability for their particular purpose, but failing this guidance books of outstanding value might be starred in the list. In selecting students' books, lists of books in use in schools and colleges of the district in which a library is situated should be of service; and for works of reference, lists of works acquired by leading scientific and technical societies by purchase or presentation by their own members might be compiled. It is desirable that annotated lists of the different classes of books in science and technology should be published for the guidance of librarians in this country, as is done by the American Library Association. The Science Library at South Kensington might be entrusted with the task of preparing such lists.

Dr. J. C. WITHERS, speaking in the discussion following Sir Richard Gregory's paper, welcomed the suggestion that the specialist could assist the public librarian in the selection of books, but urged that the editors of magazines catering for the librarian should find through ASLIB expert reviewers. He mentioned a thoroughly worthless book which had just received a laudatory review in a librarian's periodical, and said that this faulty guidance might have been avoided if the writer had had special knowledge of the subject.

Mr. W. LEONARD HILL, A.I.P.A., pointed out that a new list of "Scientific and Technical" books had been introduced in the Chemical Engineering and Chemical Catalogue and that list was now being revised. It would probably be found of assistance to searchers for technical literature. He offered to supply a complimentary copy to any library with an allowance too limited to permit of purchase.

Dr. J. E. DE VOS VAN STEENWIJK referred to the usefulness of preserving periodical literature. As far as science was concerned, he disagreed with the view that nearly all matter of interest got into book form. In astronomy it certainly was not the case.

As regards daily papers, he had heard prominent historians emphasize their importance for the sciences, especially during the war years. The problem of preserving these papers (which were as a rule printed on very bad paper) was now being studied by the International Institute of Intellectual Co-operation.

The Chairman and Dr. W. Clark, F.I.C., F.R.P.S., also spoke.

GENERAL SESSION (Part II).

Sunday Evening, September 25th, 1927.

At the second part of the final session, the chair was taken by Mr. J. G. PEARCE, Chairman of the Council of the Association.

Mr. Pearce recalled that, following on the papers presented by Mr. Twentyman and Colonel Newcombe, the Conference had passed a Resolution endorsing in general terms the recommendations set forth by the Departmental Committee in their Report and pledging the support of the Association (see page 27).

On the proposal of Mr. J. McADAM, F.L.A., seconded by Mr. G. SHAW SCOTT, M.Sc., it was determined that copies of this Resolution should be forwarded to the President of the Board of Education and to the Press. The Resolution was carried unanimously.

The following Resolutions were received through the Chairmen of the Sectional Meetings and the Informal Discussions; on the proposal of Mr. H. POTTS, M.Sc., seconded by Mr. H. ROTTENBURG, M.A., M.I.E.E., it was decided to refer these Resolutions to the Council for consideration.

From the Informal Discussions on Saturday Morning, September 24.

Resolved: That the Council be asked to set up a Committee to examine the purpose and scope of Abstracts of scientific and technical literature and the present mechanism of preparing and issuing such Abstracts and the cost thereof: this Committee to make a survey for discussion at the next Conference.

Resolved: That the Association be asked to consider the investigation of the position regarding the printing by scientific societies of their own publications with a view to a report being drawn up regarding new printing machines, &c., that were available.

Resolved: That this meeting considers it desirable that a Union Catalogue of all the books in the Municipal Reference Libraries of London be compiled, and suggests that a panel of voluntary cataloguers be enrolled through the Library Association and the London University School of Librarianship, and further that the Library Association be approached by ASLIB with a view to immediate steps being taken to obtain the assent of the Librarians of London to the carrying out of this work.

Resolved:

1. That the Fourth Conference of the Association of Special Libraries and Information Bureaux, assembled at Trinity College, Cambridge, be asked to express its opinion that closer liaison between the Libraries, and more particularly the Special Libraries, of the Empire is greatly to be desired.

2. That the Conference request the Council of ASLIB to consider the desirability of calling a special Conference or of arranging for a special section at the Annual Conference to discuss the problem of closer co-operation between libraries of the Empire and to explore the possibility of obtaining the co-operation of other bodies.

From the Informal Discussion on Saturday Evening, September 24.

Resolved: That ASLIB should refer the question of uniformity in cataloguing of periodicals to the International Institute of Bibliography in Brussels.

From Sectional Meeting (A) on Sunday Morning, September 25.

Resolved: That it be strongly recommended to the Council of ASLIB that it should appoint forthwith a Committee of experts to review the existing sources of industrial and economic statistics and information with a view to the preparation of an index to these sources.

From Sectional Meeting (B) on Sunday Morning, September 25.

Resolved:

1. That it is desirable that a fresh edition of the "Abridgment Class and Index Key" be published incorporating the Examiners' allotment marks, and that these allotment marks should be printed on the Patent Specifications.

2. That it is desirable that there should be available for public inspection a set of British Patent Specifications or Abridgments arranged in the order of the examiners' files.

3. That it is desirable that cards which have been removed from the examiners' files owing to their being older than the legal period of fifty years should be preserved in classified order and made available to the public.

Mr. E. W. FRASER-SMITH, M.A., A.M.Inst.C.E., proposed, and Mr. G. SHAW SCOTT, M.Sc., seconded, a cordial vote of thanks to the Chairman, which was passed with acclamation.

On the proposal of Mr. PERCY COHEN, seconded by Sir RICHARD GREGORY, D.Sc., F.Inst.P., F.R.A.S., the best thanks of the Conference were accorded to Sir Geoffrey Butler for his kindness in presiding; to the Master and Fellows of Trinity College for their courtesy in permitting the Conference to be held in such congenial surroundings; and to the College staff.

The proceedings then terminated.

REPORT OF THE SECOND ANNUAL GENERAL MEETING.

The Second Annual General Meeting of Members and Associate Members was held at 5.15 p.m. on Saturday, September 24, 1927, in the Hall of Trinity College, Cambridge.

Present: Sixty-nine persons were present.

Chairman: Sir GEOFFREY BUTLER, K.B.E., M.P., President of the Conference, acted as Chairman of the Meeting.

AGENDA.

1. Minutes of First Annual General Meeting, held at Balliol College, Oxford, September 26, 1926.
2. Audited Statement of Accounts for the year ended June 30, 1927. Report by the Honorary Treasurer.
3. Re-election of Auditors.
4. Election of Council.
5. Election of Officers.
6. Incorporation.
7. Other Business (if any).

Item 1.

The Minutes of the First Meeting were confirmed, and signed as correct by the Chairman.

Item 2.

The HONORARY TREASURER (Brig.-General Magnus Mowat, C.B.E.) presented the Audited Statement of Accounts for the year ended June 30, 1927 (see page 170).

Item 3.

Dr. E. E. LOWE proposed, and Dr. A. P. THURSTON seconded, a Resolution that Messrs. West and Drake be reappointed Auditors to the Association. The Resolution was carried unanimously.

Item 4.

It was resolved unanimously that the Council be re-elected as follows:—

J. G. Pearce, B.Sc., M.I.E.E., British Cast Iron Research Association.
P. K. Turner, A.M.I.E.E., M.I.R.E., Graham Amplion, Ltd.
Brig.-General Magnus Mowat, C.B.E., M.Inst.C.E., M.I.Mech.E., Institution of Mechanical Engineers.
Miss A. L. Lawrence, M.B.E., M.A., LL.B., British Medical Association.
F. W. Clifford, F.L.A., Chemical Society.
Percy Cohen, Conservative and Unionist Central Office.
H. Vincent Garrett, Rowntree & Co., Ltd.

Leon Gaster, F.J.I. (Hon. Secretary, B.I.A.J., and Hon. Secretary, Circle of Scientific, Technical, and Trade Journalists), Illuminating Engineering Society.
Sir Richard Gregory, D.Sc., F.Inst.P., F.R.A.S., British Science Guild.
B. M. Headicar, F.R.S.A., F.L.A., London School of Economics and Political Science.
L. Honeyburn, Nobel Industries, Ltd.
E. Wyndham Hulme, B.A., F.L.A. (Late Librarian, Patent Office).
R. S. Hutton, D.Sc. (Director, British Non-Ferrous Metals Research Association).
Colonel E. L. Johnson, Cleveland Scientific and Technical Institution.
Lt.-Colonel J. M. Mitchell, O.B.E., M.C., M.A., Secretary, Carnegie United Kingdom Trust.
Lt.-Colonel L. Newcombe, T.D., F.L.A., Central Library for Students.
S. J. Nightingale, Metropolitan-Vickers Electrical Co., Ltd.
A. F. Ridley, F.L.A., British Non-Ferrous Metals Research Association.
G. B. Willey, A.R.S.M., F.I.C., Hadfields, Ltd. (Research Dept.).
J. C. Withers, Ph.D., British Cotton Industry Research Association.

Item 5.

Brig.-General Magnus Mowat, C.B.E., was reappointed Honorary Treasurer, and Miss A. L. Lawrence, M.B.E., Honorary Secretary. It was left to the Council to appoint its own officers.

Item 6.

It was reported that arrangements had been completed for incorporation under the Companies Acts (1908 to 1917) as a Company Limited by Guarantee and not having a Share Capital.

Item 7.

Mr. P. K. Turner, Mrs. L. B. Flower, Mr. A. R. Barnes, Dr. W. Bonser, Dr. J. C. Withers, and Mr. L. D. Goldsmith took part in the discussion of several matters that were raised, particularly the location of next year's Conference; the Secretary was asked to investigate the possibilities of a week-end Conference at Bristol University, avoiding a date that would clash with the Conference of the Library Association.

This ended the business of the meeting.

Association of Special Libraries and Information Bureaux.

GENERAL RECEIPTS AND PAYMENTS ACCOUNT
for the year ended 30th June, 1927.

DR. (*Abridged.*) *CR.*

RECEIPTS.	£	s.	d.	PAYMENTS.	£	s.	d.
To Balance at 1st July, 1926 ...	88	1	8	By Cost of Conferences	282	3	8
,, Carnegie United Kingdom Trust	625	0	0	,, Salaries	384	12	6
,, Membership Subscriptions ...	507	18	6	,, Rent, Postage, General Office Expenses, &c.	657	19	7
,, Donations	4	4	0	,, Balance at 30th June, 1927 ...	257	3	11
,, Receipts from Conferences ...	318	9	6				
,, Sale of Reports of Conferences	23	15	3				
,, Bank Interest	14	10	9				
	£1,581	19	8		£1,581	19	8

DIRECTORY RECEIPTS AND PAYMENTS ACCOUNT
for the year ended 30th June, 1927.

DR. (*Abridged.*) *CR.*

RECEIPTS.	£	s.	d.	PAYMENTS.	£	s.	d.
To Balance at 1st July, 1926 ...	416	14	4	By Salaries	1,028	9	2
,, Carnegie United Kingdom Trust	1,000	0	0	,, Rent, Postage, General Office Expenses, &c.	249	8	6
				,, Balance at 30th June, 1927 ...	138	16	8
	£1,416	14	4		£1,416	14	4

We have compared the above Accounts with the books and vouchers and certify the same to be correct.

8th July, 1927.

8 New Court,
Lincoln's Inn,
London, W.C.2.

(Signed) WEST & DRAKE,
Chartered Accountants.

(Signed) J. G. PEARCE,
Chairman.

(Signed) MAGNUS MOWAT
Hon. Treasurer.